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(71)(72) Applicant and Inventor: KLAYH, John [CA/CA]; 383 Dovercourt Drive, Winnipeg, Manitoba R3Y 1G4 (CA).

(74) Agents: BAKER, Harold, C. et al.; Pascal & Associates, P.O. Box 11121, Station H, Nepean, Ontario K2H 7T8 (CA).

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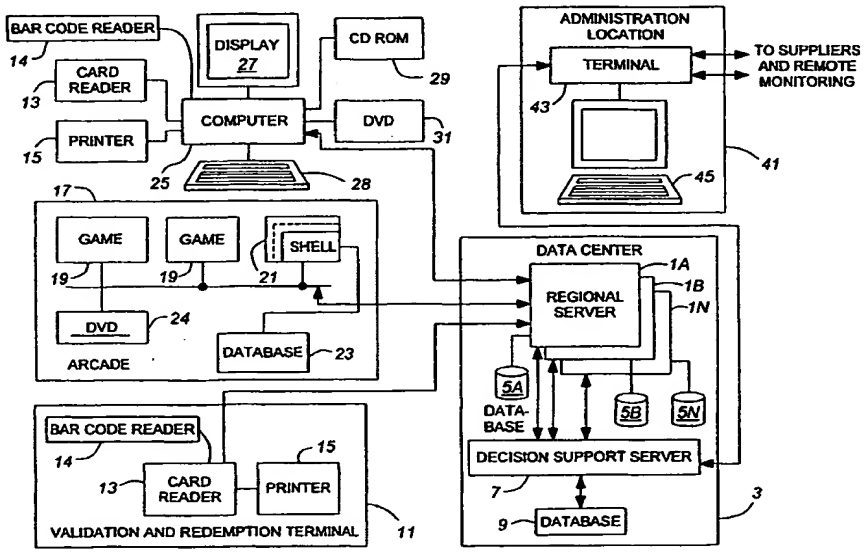

(57) Abstract

A system for controlling operation of an automatic game, comprising: an automatic game comprising virtual game pieces which are manipulated during playing of the game, and control hardware and software for displaying and controlling the virtual game pieces, an administration terminal for inputting and storing parameters relating to game play, and a network for downloading the parameters from the administration terminal to the game, whereby operation of the game having its control hardware and software programs stored at a location different from the administration terminal is controlled by said parameters.

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REMOTE ESTABLISHMENT OF GAME FORMULAE AND -PARAMETERS, E.G. FROM ADMINISTRATION TERMINAL

FIELD OF THE INVENTION

This invention relates to a method and a system for remote control of electronic game operating characteristics.

BACKGROUND TO THE INVENTION

Games which are controlled by electronic hardware and software are in widespread use, for example video games in arcades and on personal computers (PCS), and on personal game machines. In some games, parameters which control how a game is operated can be varied by the player prior to the playing of a game, e.g. to adjust speed or skill level.

The ability to change these parameters must of course be limited when the scores achieved are to result in the awarding of prizes, since the ability to locally change these parameters can result in an unfair advantage to a player. This is particularly so in games or tournaments or prize or loyalty point redemptions in which players in general, players which have particular skill levels, or the games themselves, must be handicapped to add challenge.

For this reason, games have had fixed parameters, the player only being allowed to select skill level or speed prior to playing a game, which had been assumed to cause various players of the game within a skill level to play more or less on a level playing field. However, in a large population of players, such as those playing in a tournament across a continent or across the world, mere skill level selections have been found to be insufficiently satisfactory. In particular where players or games are to be handicapped, there is insufficient variability in the games to accommodate the players

fairly, or no control over settings so that all players play on an even playing field, so to speak.

Further, games have not been able to display advertising directed to specifically identified players or to players having predetermined demographic profiles or usage patterns.

In a known system for identifying customers (which could be arcade game players), an identity card of a customer is read by a card swipe terminal which reads information stored on a magnetic strip carried by the card. The information is received at an administration office, where a computer checks the credit of the customer who is identified by the information, from a database, and provides an authorization or denial of the transaction. The transaction can be the authorization for playing of a video game.

When a debit card of a customer is swiped, a transaction value can be keyed in by the merchant or by the customer, and a PIN number is additionally keyed in by the customer. The bank account of the user, the identity of which having been previously stored in association with the PIN number and card number, is accessed, and the transaction value is debited from the bank account of the customer. This amount (less a transaction charge) is credited to the bank account of the merchant.

It is common that some credit card issuers record loyalty points, for example one point for each dollar purchased on the credit card. These points are accumulated by the credit card issuer to the credit of the customer, and can be redeemed for merchandise typically advertised in a catalogue. In some cases, the loyalty points given for use of a credit card are accumulated in conjunction with a particular vendor, such as an airline or automobile manufacture, wherein the

loyalty points can be used for airline travel with that airline or as a credit toward the purchase of an automobile. Identity cards rather than credit cards are sometimes used in the awarding of airline miles or loyalty points toward catalog merchandise, for purchases from certain vendors. However, these points have not been previously awarded on the basis of scores achieved on arcade games, at least partly due to the uneven playing field as between various players of various games, which could allow certain players to unfairly accumulate an unacceptable number of loyalty points.

In all such cases, the card issuer and the vendor (e.g. the airline) each retain a simple database to keep track of the value of points accumulated and retained after redemption for travel or merchandise.

However, in each such case, there is a single authority which has issued the card, and tie-ins of a single card with a limited number (often only one) of merchants. For example, a card issuer may have a tie-in with several merchants to provide discount on merchandise or services. In such a case, no loyalty points are awarded to the customer for patronizing a particular merchant, but loyalty points can be awarded based on use of the card. The systems are not capable of dispensing or redeeming premiums or loyalty points "on-the-spot" for certain actions taken by customers, for example for patronizing certain merchants, or by trying certain video games or achieving certain score levels or brackets.

The systems are not capable of displaying advertising directed to specific customers who have identified themselves or have been identified at a terminal, nor for tracking what advertising has been displayed to particular customers, nor for controlling what advertising is shown to such customers.

The systems are also not capable of accumulating

prize values or loyalty points won on games played on game terminals, nor of dispensing prizes to players, e.g. loyalty points, premiums or plays on the games.

Neither are the systems capable of allowing the loyalty points won or otherwise acquired to be used as a medium of exchange between players and member merchants, e.g. exchanging points won playing a video game for premiums which can be used at various merchants

SUMMARY OF THE INVENTION

The present invention is a system and method which can provide for a central authority, e.g. and administrator, to create various parameters to remotely control operation of games which are located at remote locations. These parameters can control score brackets, par, scores and/or loyalty points and/or prizes to be awarded for achievement of various scores or brackets for players in general or for players of particular demographic profiles or for particular identified players, to establish personal, group or game handicap values based on past play history of players in general of a game or of players of particular demographic profile or of particular identified players, and can be comprised of algorithms which control play of the game itself.

An embodiment of the present invention is an integrated on-line system which can accumulate exchange values associated with any customer from any retailer which has authorized access to the system, including the afore noted games. The awarded exchange values for any transaction, for repetitive play of games, or for scores (handicapped or not) achieved on games, can be controlled by an administrator or by authorized plural administrators, and can in addition be varied by location of the customer, by customer activity, by time and/or date, and by past history of either the activity itself or of the actions of the customer.

In addition, the administrator can vary the characteristics of whatever software program the customer, merchant, etc. is interacting with, such as awarded loyalty points, advertisements, premiums, scores, game difficulty, characteristics of a game, award brackets, pricing by currency and/or loyalty point exchange, etc. can be controlled and varied. The program can involve scoring of sporting events, scoring of school tests, operate applications such as e-mail, etc., or it can be a video game operating in a system of the type described in U.S. patent 5,083,271 issued January 21, 1992 or on personal or public computer. The program can be an advertisement displayed on a video terminal which can be one of the games described in the afore noted U.S. patent, or on a personal or public computer, or on a display or a video telephone, a network computer communicating via a private network, the internet, cable or the equivalent, or via a telephone line. The advertisement can be shown in one or more frames which share the display with a game, or can occupy the entire display area. The advertisement can be directed to a particular player, or to a class of customer to which the player belongs, and/or can be scheduled based on time and/or date and/or location at which it is to be presented. The advertisement can be changed based on various criteria, such as the location of the display, how many times it has been run, how many times it has been directed to the customer or class of customer at a particular display or display location or at plural particular or class of locations.

Games can be changed and varied as to degree of difficulty and currency or exchange value price to participate, competition brackets can be set up and varied, thresholds for prizes can be established and varied, prize and premium values can be accumulated for

various activities such as plays, purchases, loyalty, and/or timing, customers or players can be authorized or disqualified, advertising can be directed to certain customers or classes of customers as noted above, premiums can be accumulated and dispensed and prizes awarded across any kind of commercial or non-commercial activity with controllable interchangeability. Since the parameters are controlled by an administration terminal, they can allow players to play not only single kinds of games, but different kinds of games individually or in tournaments, fairly and with a level playing field. Particular players or groups of players can thus be prohibited from accumulating loyalty points, premiums or prizes unfairly (e.g. unfairly to other players or unfairly to the loyalty point, premium or prize dispensing authority).

The present invention thus provides for the first time an efficient way of combining the loyalty point and premium systems of any (rather than restricted) merchants as well as the playing of software controlled games, allowing the loyalty points to be used for redemption by any of subscribing merchants including the provision of additional or subsequent game play, and at the same time gathering activity information about the customers of those merchants so that advertising may be targeted and efficiently delivered to those exact customers which can best benefit from the advertising. By the use of the term merchants, included are merchants not only of merchandise, but also of services including the services of video games.

In accordance with an embodiment of the present invention, a system for controlling operation of an automatic game comprises an automatic game comprising virtual game pieces which can be manipulated during playing of the game, and control hardware and software

for displaying and controlling the virtual game pieces, an administration terminal for inputting and storing parameters relating to game play, and a network for downloading the parameters from the administration terminal to the game, whereby operation of the game having its control hardware and software programs stored at a location different from the administration terminal is controlled by the downloaded parameters.

In accordance with another embodiment a method of controlling operation of an automatic game comprises providing a local automatic game having variable operating parameters, downloading the parameters from a remote location, and operating the game with the downloaded parameters.

BRIEF DESCRIPTION OF THE DRAWINGS

A better understanding of the invention will be obtained by a consideration of the detailed description below, in conjunction with the following drawings, in which:

Figure 1 is a block diagram of a preferred embodiment of a system on which the present invention can be implemented,

Figure 2 is a flow chart of call initialization and loyalty point or coupon data interchange, and

Figure 3 is a histogram of player scores against number of plays.

DETAILED DESCRIPTION OF EMBODIMENTS OF THE INVENTION

U.S. patent 5,083,271 is incorporated herein by reference. This patent describes plural game arcades which are in communication with a central computer, or with one of plural regional computers which communicate with a central computer. The regional computers receive game score data and compute tournament winners, downloading both winner information and advertising to local games at the game arcades.

Turning to Figure 1, in place of the regional computers described in the above-noted patent, regional servers 1A, 1B...1N, etc. are used. Each regional server is located at a separate regional data center, although for convenience of illustration they are all shown in this Figure in data center 3.

Each regional server has a memory containing a corresponding database 5A, 5B...5N coupled to it. In the afore noted patent, the corresponding memory stores not only score data, but also values of money on deposit to be credited against the playing of a game, and handicaps of players and/or games. In accordance with an embodiment of the invention, the databases 5A, 5B...5N also store specialized data relating to parameters used in a game, such as difficulty levels, points to be awarded for certain game activities, and other functions to be described in more detail below, as well as parameters and content relating to advertising, premiums, loyalty points, etc.

The data to be stored in databases 5A...5N is loaded by a decision support server 7, from data stored in database 9 with which it communicates.

Validation and redemption terminals 11 are in communication with the regional servers 1A...1N. Each of the terminals 11 is comprised of a card reader 13 and preferably a bar code reader 14, smart card reader, or the equivalent, coupled to a printer 15. The card reader is preferably also a card for writer for writing the magnetic stripe on a card and/or for updating, debiting or crediting one or more values stored on a smart card (a card which carries a processor or the equivalent and a memory). The term card reader is used in a general sense, since it can include a keypad or keyboard which can be used by the customer and/or merchant. The customer can also or alternatively be identified by a

voice identifier, an eye iris reader, a fingerprint reader, a palmprint reader, a keyed-in identity code such as a PIN number, etc. The printer is used to print receipts and coupons, preferably with a bar code. The card reader can be based on the type made by Verifone Corp. for swiping cards and dialing a credit or debit card administration office.

A terminal 11 should be located at the premises of each associated merchant authorized to use the system, and in addition can be located at one or plural arcades 17 or other single or multi-terminal system. A system which can be, but is not limited to arcade 17 which is similar to the system described in the afore noted patent is in communication with a corresponding server, in a manner as will be described later. However, rather than each game 19 communicating directly with a regional server via its own interface, it is preferred that it communicate with a regional server through a master game 21, via shell software which uses a particular communication protocol which can encrypt data. This will be described in more detail later. A database 23 is also coupled to the master game 21.

A computer 25, referred to below as a public PC 25, can be in communication with an associated regional server 1A..1N. Preferably a card reader 13, bar code reader 14 and printer 15 are coupled to the computer, as well as a display 27, keyboard 28, game controls (e.g. a joystick, mouse, trackball, pedals, etc.), a CD ROM player 29, and a DVD (digital versatile disk) player 31.

An administration office 41 contains a computer terminal 43 preferably operating in a Windows™ software environment, with a display 45. Rather than a Windows™ software environment, any type of operating system can be used, such as one which will operate under control of applets downloaded from the internet or any other

network, MacIntosh, OS/2, etc. The terminal 43 includes a database and a processor for controlling parameters of software used in the system, and can communicate with the decision support server 7 as will be described below.

In operation, games, advertising and parameters relating to loyalty points and/or coupons are downloaded under control of the decision support server 7 to database 9, then are distributed to regional servers 1A...1N for storage in databases 5A...5N, then are downloaded to database 23 via master game 21. Alternatively the games, parameters and/or advertising are stored at the arcade 17 on local mass storage devices such as hard disk drives, digital versatile disks (DVDs) or CD ROMs (or can be stored in a semiconductor or any other form of mass storage memory), and are enabled from data stored in the decision support software. The games, parameters and/or advertising can be downloaded to the database 23 or can be provided by applet if desired. In the description below, and only for this example, the games and advertising will be described as being stored on DVDs (in database 23) at the arcade. The database will be considered for this example to be a combination of the local mass storage and semiconductor memory, but it should be understood that the data can alternatively be downloaded from database 5A...5N coupled to the regional server, and stored for use as needed in the database 23.

It is preferred that the games themselves should be written within a shell, with software "hooks" between the games and shell. The shell should be responsible for starting and stopping the game, altering its parameters, controlling the display of the game that is to be played, and communicating both with other games and with the regional server 1A...1N. It is preferred that each of the games should communicate with the regional server only under control of the master game 21. The software

operated by the master game 21 should in addition be designed to communicate with each of the games of the arcade, and with a designated regional server using a communications manager program, in accordance with a predetermined protocol.

Subscriber accounts are retained in the database 9, and are preferably comprised of the following fields:

1. Account data (customer name and PIN),

2. Balance of account (in currency), both current balance and pending balance (the latter being the expected balance after an ongoing transaction has been completed),

3. The identity and value of coupons and premiums allocated to the subscriber,

4. The balance value of loyalty points associated with the customer, e.g. as incremented or decremented by a device such as by an input device at a merchant location (for example by inputting via a keypad connected to the card reader 13 at a validation and redemption terminal 11) or by an administrator via terminal 43 at the administration location 41, or by operating an automatic terminal such as a coin telephone having a swipe card reader in administrative communication with regional server 1A to 1N, a game machine, etc.,

5. Game ratings, such as skill level of the subscriber for variously played games, handicap values of the subscriber for variously played games, profiles (e.g. how much time is allocated to the player to complete various games),

6. Viewing history of advertising (e.g. a record of the most recent time that the subscriber has viewed a particular advertisement),

7. Images displayed for this subscriber,

8. The identities of identification cards issued to the player,

9. Merchandise orders, e.g. the identity and loyalty point, premium or currency cost of merchandise that has been ordered, the date ordered, the date the order was sent to the supplier, the date the order was shipped, etc.,

10. The game play history, e.g. for each game played, the rank achieved, number of players in a game or tournament, etc.,

11. Data regarding membership of the customer in competitions or teams,

12. Records of payments of fees made by the customer, and

13. Records of customer premiums and/or prizes awarded (which can be used e.g. for tax computation).

The administrator characterizes each game and activity relating to merchant products and services with certain parameters, and downloads these parameters from terminal 43 to server 7. For example;, the administrator establishes game formulae for each game, loyalty points (or none) for playing each game, for patronizing particular merchants, etc.

When a subscriber is issued an identity (ID) card, a PIN number is issued in a well known manner, and information re its issuance is uploaded from a validation terminal 11 to the associated regional server 1A to 1N. A record in the database 9 relating to this subscriber is established by server 7. The record is seeded by the parameters provided by the administration terminal to the server 7. For example, upon first initiation of the record, a number of loyalty points can be deposited to the subscriber, and recorded in the database in field 4.

The subscriber then pays currency to play say, 5 video games. The payment value is entered by swiping the ID card in a local card reader in the arcade, and by then entering the PIN number of the subscriber and the number

of games to be played, or a currency amount into a local keypad. This amount is stored (deposited) in database field 1 (see the above field list) of database 9, after uploading from the arcade 17 via master game 21.

The subscriber then goes to the game and swipes his card in a card reader associated with the game. The request to initiate the game is sent to the game from the card reader, and value of the game play is sent to the decision support server 7. Server 7 addresses database 9, and selects the record of the subscriber from the card number read and provisionally decrements the amount on deposit, storing the resulting pending balance. If the game is not played (e.g. if there is a power outage), the pending balance is again incremented back to the previous balance after a predetermined amount of time. By using a central decision support server 7 and database 9 to store the subscriber accounts, the subscriber can be provided by the service at any location which communicates with any regional server. A duplicate account is established and retained in the regional support server database 5A..5N the records being mutually updated from time to time.

At the time of establishment of the record in database e.g. 5A, the server 7 would also store values in the remaining fields of the record. For example, it would store an advertisement value, to be described in more detail below, in field 6, indicating that no ads have been presented to the subscriber.

After the subscriber has swiped his card at a game, and thus identifies himself, the local database provides a data message to the local system which enables the selected game. If it is the first time the customer has identified himself to the local system, the regional server e.g. 1A sends a data message which enables the selected game. It also enables a DVD to run an

advertisement to the game via its shell, which overlays the game in a window, or is presented prior to or with the initial or final screens of the game. For example, the initial screen can be a "welcome to a new player" screen, with an advertisement relating to one or another of the associated merchants. The advertisements to be run are pre-established at the administration terminal 43.

The fact of running a particular advertisement and of the subscriber being located at a particular game (determined from his ID card) is then stored in the 10th field of the record. When the game has been completed, the score is uploaded to the regional server and the rank of the player is established and is stored in the 10th field. The number of plays of the player of that game, and of other games, are also stored in the 10th field. On the basis of this, depending on the administrator, loyalty points, coupons or premiums can be provided to the subscriber.

For example, if the subscriber has achieved a particular score, a predetermined number of loyalty points can be awarded, and added to those in the balance in the 4th field of the database record. A printer 15 can dispense a coupon to the subscriber e.g. for a discount on a food item at a fast food outlet, the serial number and value of which is recorded in the 3rd field of the record. The printout can also record the score and the game that was played.

The identity of the advertisement which was run is recorded in the 6th field of the record.

The subscriber in achieving a particular amount of expertise can be handicapped by the software in the regional server 1A, and the handicap value recorded in the 5th field of the record, the rank achieved recorded in the 10th field, and all of this information can be printed

on the same ticket as the coupon, or on another ticket.

Now assume that the player attends a different arcade, and wishes to play a game. He will swipe his ID card in the local card reader, press a button to command the start of a game if necessary, and his identity, a command to play a game and the cost to play is uploaded to the associated regional server, say server 1B. Server 1B searches its database 5B for a record of the identified subscriber, and doesn't find it. It then sends an inquiry to the server 7, which sends an inquiry to each of the other regional servers. Server 1A responds, and provides an indication to server 1B that the subscriber record is stored in a database associated with server 1A.

Server 1A then sends the record of the subscriber to server 1B via server 7. Server 1B checks whether the second field has sufficient balance to pay for the game. On the indication that it does, a provisional decrement is done as described earlier, and server 1B sends a signal to the master game of the arcade to enable the game.

The server 1B also checks the ad view history and image last viewed, and enables the DVD at the arcade to run the next advertisement in the predetermined sequence of advertisements to the game to be played, via the game shell. The entire process is repeated as described earlier.

In the event the customer has used the local system before, and his identity data, etc. is stored in the local database, the above process can be carried out using the data stored in the local database, rather than using the data stored in the server.

The score can result in loyalty points or premiums being awarded to the player, which are stored in the account of the player.

Assume now that the subscriber wishes to redeem loyalty points or premiums. The subscriber can visit a validation and redemption terminal, which can be at the location of a merchant, a public PC, or at an arcade. The ID card of the subscriber is read, and an attendant types in a request on local keyboard such as 28 to obtain the number of loyalty points, or the identities of coupons or premiums held by the subscriber. This request is uploaded to the regional server, which reads the database e.g. 5A and accesses the record of the subscriber identified by the card (and PIN number, if desired). On verification by the regional server, the data stored in the fields of the information requested by the attendant are then downloaded to the local terminal, such as computer 25, and is displayed on display 27.

The customer can ask for redemption of the value of the coupon. For example, if the validation and redemption center is at a fast food outlet, and the coupon is for a discount on a hamburger from the fast food outlet, the merchant can sell the hamburger at the required discount, take the coupon from the subscriber, and key in the coupon on a keypad or read a barcode or magnetic stripe or the equivalent carried by the coupon, to identify it and record it as having been redeemed. The local computer or the equivalent then uploads this data to the regional server 1A, which records that the coupon has been rendered.

While this transaction is going on, there could be a display adjacent the redemption equipment. The regional server, in learning of the presence of the subscriber at that location from the ID card swipe, can then look up the advertisement viewing history from the 6th field of the subscriber's record in the database, and send a control signal to the computer or the equivalent at the redemption center, to enable a local DVD 31 to run

the next advertisement in a predetermined sequence to the display which is adjacent the subscriber. Loyalty points can be awarded to the identified subscriber based on viewing a particular advertisement, and stored in the database as described earlier.

In a similar manner, loyalty points can be redeemed. The subscriber can attend a redemption center which can be a merchant, or a special catalog store. After swiping the ID card of the subscriber and keying in a request to display the number of loyalty points accrued to the subscriber, the regional server e.g. 1A accesses the record of the subscriber using his ID and PIN number in database e.g. 5A, and downloads the information to a local display. Following redemption of a particular number of loyalty points for the merchandise or services requested, the 4th field of the record of the subscriber is decremented by the value of the loyalty points redeemed.

It should be noted that the system is global, in that any merchant can have a redemption terminal. Upon redeeming loyalty points which have been accrued by the subscriber by playing games, achieving scores, viewing advertisements, or using services of other merchants, etc. the redeeming merchant can be owed a certain value based on the redemption. This value or the equivalent in loyalty points, can be stored (credited) in a database 5A related to the merchant. When a subscriber purchases goods from that merchant, a certain number of loyalty points can be awarded the subscriber, and the balance debited from the balance of the merchant. Administrator service fees in the form of loyalty points can be accrued to an account of the administrator for each transaction. In this manner, loyalty points become a medium of exchange for the subscriber, the merchants and the administrator.

Loyalty points, or a monetary amount can be decremented from an account of each merchant for each play of its advertisement.

At the end of a predetermined period, for example quarterly, yearly, etc., the administrator and merchants can settle the accounts, e.g. collecting a prescribed monetary value for negative balances of merchant loyalty point accounts, and paying a prescribed monetary value for positive balances of merchant loyalty point accounts.

Loyalty points can also be redeemed by the customer for any merchandise or service at any merchant location or venue at which a service terminal is located, or for game play at an arcade.

Two types of data interchange are preferably used I the system: synchronous and asynchronous. In synchronous interchanges, the client initiates a connection to a server, sends a request, and await a reply, in a manner similar to credit card authorizations in retail stores. An example of this type of interchange according to an embodiment of the present invention is the validation of a prize receipt. Asynchronous interchanges are used for database synchronization. They allow events that have been queued by clients to be sent to servers, and allow servers to add or update information in a client's database.

Four modes of communication between clients and servers are preferred to be used:

- Queries from clients to servers for specific information,

- Events being transmitted from clients to servers,

- Record and file system synchronization transmitted from servers to clients, and

- Interactive on-line traffic, allowing on-line services in which processing is done in real-time by the

server, or through a proxy process on the server.

Because of the short duration and unpredictability of query calls, they are preferably implemented with a point-of-sale, packet type transaction type network, with dial-in connections from various client locations using a global toll-free number.

The remaining types of calls are more predictable in nature and duration, typically lasting one or more minutes, and preferably use full duplex stream-oriented communications. This can be implemented using a dedicated or non-dedicated dial-up line between client and server, using TCP/IP ports (internet or intranet).

Thus each server can initiate two types of connections to client servers: asynchronous dial-in to the transaction network at relatively low speeds (e.g. 2400 baud or higher) for short duration queries, or via a dial-in PPP connection (e.g. 28.8 kbaud or higher) or ISDN to perform sockets-based communication.

The data transmission protocol used is preferred to be bi-directional full-duplex asynchronous communication using X.25-based packet switching, but other communications technologies, e.g. ADSL can be used, as they become widely available. Prior to application to the network, the event data should be packetized, inserted into variable length telecommunication packets, compressed and encrypted using the encryption key of the location. Other fields in the telecommunication packet need not be compressed or encrypted. The received packets should be decrypted, decompressed, and extracted from the telecommunication packets.

The transmissions are preferably initiated from the transmitting entity (dial-in) rather than being polled. The calls can be normal (e.g. to pass data re start, game plays, alarms, meters, etc. to and from the client, stored in a queue at that location for subsequent

transmission), urgent (e.g. such as subscriber information when a card is swiped), and receipt validation (e.g. to verify calls used by validation terminals).

Terminals communicating within a single location can use 10baseT twisted pair wiring and 802.3 (Ethernet™) standard for data link management, or higher speed Ethernet or other technologies, as they become available. The regional servers can accept connections from either the point-of-sale transaction network or from a TCT/IP internet/intranet connection (using Berkeley sockets). The same application-layer protocols operate over each connection, with the possible exception of synchronization, which can operate only over TCP/IP connections, if desired.

The four types of packets referred to above can have a number of subtypes, as follows:

Packet Type:	**Possible Subtypes:**	
Control	Acknowledgment (ACK)	Negative Acknowledgment (NAK)
	Context Negotiation	Ping
	Ping Response	Open Query Link
	Close Query Link	Open IP Link
	Close IP Link	Link Status Request
	Link Status Response	Suspend Processing
	Suspend Processing Response	Resume Processing
	Resume Processing Response	Synchronize
	Synchronize Response	
Query	Test	Test Response
	Receipt Validation	Receipt Validation Response
	Subscriber Information	Subscriber Information Response
	Account Withdrawal	Account Withdrawal Response
	Account Deposit	Account Deposit Response
	Subscriber Account Data Request	Subscriber Account Data Response
	Winning Redemption Play	Winning Redemption Play Response
	Subscriber ID Request	Subscriber ID Response
	Credit/Debit Request	Credit/Debit Response
	Save State Request	Save State Response
	Restore State Request	Restore State Response
	New Subscriber Card Request	New Subscriber Card Response
	Reserve Merchandise	Reserve Merchandise Response
	Purchase Merchandise	Purchase MerchandiseResponse
	Release Merchandise	Release Merchandise Response
	Subscriber Ranking Request	Subscriber Ranking Response

	Event	Alarm	Tournament Play
		Redemption Play	Meter Readings
		Ad Statistics	Service Accesses
		Down Times	New Subscriber
		New Team	Issued Coupons
		Loyalty Point Awards	
	Synchron-		
	ization	Inventory	Table Download
		File Initial Download	File Next Download
		File Initial Upload	File Next Upload

When a call is connected over the point of sale network or either of the TCP/IP ports, the client and server exchange context negotiation packets to configure the session communications as shown in Figure 2. When both parties have acknowledged the context negotiation, data packets can begin.

The client sends a context negotiation packet with the settings it wishes to use for the call (including the encryption and compression parameters). This packet also tells the server what type of call this is (e.g. events, queries, etc.). The server examines the context negotiation packet and determines whether the values are acceptable. If so, it sends a context negotiation packet with the same settings to the client. The client acknowledges this packet to the server, and the call is considered to be established.

If the server cannot use the context provided by the client, it sends its own context negotiation packet back to the client with its preferred settings (e.g. a "lower" standard for compression or encryption). If the client agrees with these settings, it sends an acknowledgment to the server, and the call is considered to be established.

The contents of the context packet are sent uncompressed, but encrypted using the terminal's 16 byte license key and a TEA encryption algorithm. The terminal cannot operate unless the license key entered at the

machine matches the key entered through the server administrative application.

If a device receives a context packet for an encryption method it can perform, it can NAK (unacknowlege) the packet. The server should retransmit session key packets, working from best to worst encryption (retrying a number of times in case of communications faults) until the client returns an acknowledgment. If the client never acknowledges the packet, the server should close the connection. Likewise, if the server never acknowledges the packet from the client, the client can close the connection. The client is free to retry with a new socket on the same call.

When a connection is established over the asynchronous point of sale link, the client may immediately begin transmitting data packets to the server. Then a PPP connection is established, the client should create a socket connection to one of the TCP ports listed above. Packets can then be sent over this socket connection. Multiple socket connections can be opened to allow parallel processing of synchronization, event and query traffic.

Query exchanges preferably occur in lockstep over a single connection. When a terminal issues a query, it waits on the same connection for a matching query response to arrive. The terminal then processes the query response, sends an acknowledgment, then closes the connection or continues with other query exchanges.

If a query initiates the download of table and/or file information to the client, the downloads should take place before the server sends the query response. When the query response is received at the client, it can assume that all downloads are complete.

Event transfer from clients to servers follows a

lockstep acknowledgment cycle in which the client sends event packets and the server sends acknowledgment or nonacknowledgment packets in response. Events should remain in the client's event queue until an acknowledgment has been received from the server. When all events have been sent and acknowledged, the client can close the connection.

When a client makes a synchronization call, the client and server begin by exchanging inventory packets. The client sends an inventory of all data currently loaded, and the server sends an inventory of what the client should have (including table records and files).

The client should use the server's inventory to delete all records and files that are not present at the server. The server should use the client's inventory to build a set of table and file download packets to send new information to the client.

Once the inventories have been exchanged, the server should begin sending table and file download packets. The client should respond to these with either an acknowledgment or nonacknowledgement packet. When the server has sent all records, it should send a table download packet with 0 records to indicate the end of data. The client is free to close the connection at this point.

All packets should be framed with a consistent header and trailer, to allow the protocol processor in the receiving server or terminal to distinguish between different versions of requests. A preferred packet is as follows:

Offset:	Field Size:	Description:
0	I byte	Packet type - the following values are defined: 0x80 = Control Packets 0x81 = Query Packets 0x82 = Event Packets 0x83 = Synchronization Packets Note that the high bit is used to distinguish

			these packets from earlier version packets.
	1	I byte	Subtype - the following values are defined:
			Control Packets:
			0 = Acknowledgment
			1 = Negative Acknowledgment
			2 = Context Negotiation
			3 = Ping
			4 = Ping Response
			5 = Open Query Link
			6 = Close Query Link
			7 = Open IP Link
			8 = Close IP Link
			9 = Request Link Status
			10 = Link Status Response
			11 = Suspend Processing
			12 = Suspend Processing Response
			13 = Resume Processing
			14 = Resume Processing Response
			15 = Synchronize
			16 = Synchronize Response
			Query Packets:
			0 = Test
			1 = Test Response
			2 = Receipt Validation
			3 = Receipt Validation Response
			4 = Subscriber Information
			5 = Subscriber Information Response
			6 = Account Withdrawal
			7 = Account Withdrawal Response
			8 = Account Deposit
			9 = Account Deposit Response
			10 = Subscriber Account Data Request
			11 = Subscriber Account Data Response
			12 = Winning Redemption
			13 = Winning Redemption Response
			14 = Subscriber ID Request
			15 = Subscriber ID Response
			16 = Credit Debit Request
			17 = Credit Debit Response
			18 = Save State Request
			19 = Save State Response
			20 = Restore State Request
			21 = Restore State Response
			22 = New Subscriber Card Request
			23 = New Subscriber Card Response
			24 = Reserve Merchandise
			25 = Reserve Merchandise Response
			26 = Purchase Merchandise
			27 = Purchase Merchandise Response
			28 = Release Merchandise
			29 = Release Merchandise Response
			30 = Subscriber Ranking Request
			31 = Subscriber Ranking Response
			Event Packets:
			0 = Alarm
			1 = Tournament Play
			2 = Redemption Play
			3 = Meter Readings
			4 = Ad Statistics
			5 = Service Accesses
			6 = Down Times
			7 = New Subscriber
			8 = New Team

			9 = Issued Coupons 10 = Loyalty Point Awards Synchronization Packets: 0 = Inventory 1 = Table Download 2 = File Initial Download 3 = File Next Download 4 = File Initial Upload 5 = File Next Upload
2	2 bytes		Packet size (in bytes, including the type, subtype, size and CRC fields), LSB first
4	N bytes		Data (see individual packet description for format)
4+N	2 bytes		CRC of packet.

Acknowledgment packets indicate the successful receipt of information. The total size of the framed packet will be 6 bytes.

Field Size:	Description:
1 byte	Packet Type = 0x80
1 byte	Packet Subtype = 0x00
2 bytes	Packet Size = 6
2 bytes	CRC

Negative Acknowledgment (NAK)

Negative Acknowledgment packets indicate that a transmission was unsuccessful or that the receiver encountered an error processing the data. The total size of the framed packet will be 7 bytes.

Field Size:	Description:
1 byte	Packet Type = 0x80
1 byte	Packet Subtype = 0x01
2 bytes	Packet Size = 7
1 byte	Failure Code 0 Generic failure 1 System error 2 Allocation failure 3 Invalid Request 4 Communications error
2 bytes	CRC

Context Negotiation

Context Negotiation packets have the following data structure:

Field Size:	Description:
1 byte	Packet type = 0x80

```
1 byte              Packet Subtype = 0x02
2 bytes             Packet Size = 40+
4 bytes             Location ID (LSB first)
6 bytes             Terminal ID
[BEGIN ENCRYPTED AREA]
16 bytes            License Key
1 byte              Connection type
1 byte              Encryption type
1 byte              Transmission Sequencing
2 bytes             Key Length (in bytes, LSB first)
N bytes             Key Data
(Pad encrypted area to even 8-byte boundary with zeros)
[END ENCRYPTED AREA]
2 bytes             CRC
```

Location ID will be 0 in packets from the client. It will be filled in with packets from the server with the location ID configured for the terminal ID from the client, or 0 if the terminal is not configured in any location. Terminals that are not configured in any location can still access the server for some limited functions. However, if the licensing information is not correct, the server will never send a Context Negotiation packet to the client.

The licence key is a value entered through the user interface at the terminal, and entered by the operator when configuring the machine in the administrative application. It is used to encrypt the encrypted area of the Context Negotiation packet. When the packet is received, the receiving node decrypts the encrypted area with its stored license key, then compares that key with the decrypted version from the packet. If the two do not match, the machine is not licensed correctly and the Context Negotiation will not succeed until this is corrected. At the terminal, a message indicating incorrect license information should be displayed or printed. At the server, the event will be logged for reporting and/or alarming.

The connection type will be one of the packet type codes (0x80 through 0x83) indicating the type of

connection being made. This will indicate to the server which protocol processor to launch for the connection. Note that if more that one type of activity needs to occur on one connection, the client can send a Context Negotiation packet during the call to renegotiate the call type (and other parameters of the connection as well.) When this occurs, all in-progress operations are completed then renegotiation occurs.

The Encryption type field will be one of the following values:

Value	Description
0	No encryption
1	XOR of key and plain text
2	Earlier Protocol Version encryption
3	TEA (see Appendix A for algorithm)
4	IDEA
5	RSA

Transmission sequencing will be one of the values below:

Value	Description
0	Lockstep (send packet, wait for Ack, send next packet)

The contents of the key data will depend on the encryption type as shown here:

Encryption Type:	Key Length and Key Data:
0	data will be included
1	Key length will be 0, and no
2	Key length and key data can vary
3	Key length and key data can vary
4	Key length is 16, key data can vary
5	Key length is 5, key data can vary
	Key length and key data can vary

For connections between terminals within a single location, or between processes on a single terminal, the terminal ID and location ID are both set to 0. The contents of the packet will not be encrypted and should have the following values:

Encryption type = 0

Transmission Sequencing = 0

Key length = 0

This type of connection is only valid on LAN segments or between processes on a single machine.

The license key field will be filled by the terminal's license key. This allows the server process to enforce unique license keys and prevent services from establishing their own connections to the server without their own valid license keys.

Ping

Ping packets are used to test communications to the server. The total size of the framed packet will be 6 bytes.

Field Size:	**Description:**
1 byte	Packet Type = 0x80
1 byte	Packet Subtype = 0x03
2 bytes	Packet Size = 6
2 bytes	CRC

Upon receipt of a Ping packet, the server will immediately generate a Ping Response packet and send it to the client. This does not require any database or file system access, and can be used to test the basic connection between client and server processes.

Ping Response

Ping Response packets are sent in reply to a Ping packet. The total size of the framed packet will be 6 bytes.

Field Size:	**Description:**
1 byte	Packet Type = 0x80
1 byte	Packet Subtype = 0x04
2 bytes	Packet Size = 6
2 bytes	CRC

Open Query Link

A request that a link to the server be created that is capable of supporting query traffic (or increases the reference count of an existing link). The total size of

the framed packet will be 6 bytes.

Field Size:	Description:
1 byte	Packet Type = 0x80
1 byte	Packet Subtype = 0x05
2 bytes	Packet Size = 6
2 bytes	CRC

This operation is intended for use between slave and master terminals within a location or between processes on a single terminal. On receipt of this packet, the recipient should establish a connection to the server suitable for query traffic. This may mean forwarding a similar request to the next higher server in the hierarchy.

If there is already a link established, its reference count is incremented.

Close Query Link

A request that a link to the server established by an Open Query Link request be closed (or the reference count of the link be decremented). The total size of the framed packet will be 6 bytes.

Field Size:	Description:
1 byte	Packet Type = 0x80
1 byte	Packet Subtype = 0x06
2 bytes	Packet Size = 6
2 bytes	CRC

Open IP Link

A request that a link to the server be created that is capable of supporting IP traffic (or increases the reference count of an existing link.) The total size of the framed packet will be 6 bytes.

Field Size:	Description:
1 byte	Packet Type = 0x80
1 byte	Packet Subtype = 0x07
2 bytes	Packet Size = 6
2 bytes	CRC

This operation is intended for use between slave and master terminals within a location or between processes on a single terminal. On receipt of this packet, the recipient should establish a connection to

the server suitable for all types of traffic. This may mean forwarding a similar request to the next higher server in the hierarchy.

If there is already a capable link established, its reference count is incremented.

Close IP Link

A request that a link to the server established by an Open IP Link request be closed (or the reference count to the link be decremented). The total size of the framed packet will be 6 bytes.

Field Size:	Description:
1 byte	Packet Type = 0x80
1 byte	Packet Subtype = 0x08
2 bytes	Packet Size = 6
2 bytes	CRC

Request Link Status

A request for the current link status. The total size of the framed packet will be 6 bytes.

Field Size:	Description:
1 byte	Packet Type = 0x80
1 byte	Packet Subtype = 0x09
2 bytes	Packet Size = 6
2 bytes	CRC

When a server receives this request, it should respond with the status of the link to the main ADMIN server group. This may mean forwarding a similar request to the next higher server in the hierarchy.

Link Status

Returns to the current link status. Sent in response to a Request Link Status packet. The total size of the framed packet will be 6 bytes.

Field Size:	Description:
1 byte	Packet Type = 0x80
1 byte	Packet Subtype = 0x0A
2 bytes	Packet Size = 7
1 byte	Link Status

Low order nibble is current link status

- 0x00 Link state unknown (indicates an error)
- 0x01 Link is idle
- 0x02 Connecting asynchronous
- 0x03 Connecting asynchronous, IP request pending

```
                        0x04   Connecting IP
                        0x05   Connected asynchronous
                        0x06   Connected asynchronous, IP request
                               pending
                        0x07   Connected IP
                    High order nibble is modem state (if applicable)
                        0x00   Modem idle (or no modem in link)
                        0x10   Modem is dialing
                        0x20   Modem is waiting for answer
                        0x30   Modem is connected
                        0x40   Modem is authenticating
                    High bit indicates processing is suspended
                        0x80   Processing suspended
1 byte          Query Status
                    High bit is one if a query is in progress
                    Bits 0-6 indicate the percentage complete
1 byte          Event Status
                    High bit is one if an event exchange is in
                    progress
                    Bits 0-6 indicate the percentage complete
1 byte          Synchronization Status
                    High bit is one if a database synchronization is
                    in progress
                    Bits 0-6 indicate the percentage complete
2 bytes         CRC
```

The fields in the response packet relating to query, event and synchronization status are relevant only when the server process is running on a master terminal within a location. All other servers will return 0 for these three fields.

Suspend Processing

Requests that the communications process on the master terminal suspend any activity that could impact system performance. This prevents service degradation to ensure fair tournament play. The total size of the framed packet will be 10 bytes.

Field Size:	Description:
1 byte	Packet Type = 0x80
1 byte	Packet Subtype = 0x0B
2 bytes	Packet Size = 10
4 bytes	Time-out (seconds)
2 bytes	CRC

Suspend Processing Response

Sent by the communications process on a master terminal in response to a Suspend Processing request packet, indicating that the processing will be suspended as soon as possible. The client can use Get Link Status

to determine when processing has been suspended. The total size of the framed packet will be 6 bytes.

Field Size:	Description:
1 byte	Packet Type = 0x80
1 byte	Packet Subtype = 0x0C
2 bytes	Packet Size = 6
2 bytes	CRC

Resume Processing

Informs the communications process on a master terminal that normal processing can be resumed. This should be performed after a time-critical operation has completed, and should balance each Suspend Processing packet. The total size of the framed packet will be 6 bytes.

Field Size:	Description:
1 byte	Packet Type = 0x80
1 byte	Packet Subtype = 0x0D
2 bytes	Packet Size = 6
2 bytes	CRC

Resume Processing Response

Sent by the communications process on a master terminal in response to a Resume Processing request packet, indicating that normal processing will be resumed. The total size of the framed packet will be 6 bytes.

Field Size:	Description:
1 byte	Packet Type = 0x80
1 byte	Packet Subtype = 0x0E
2 bytes	Packet Size = 6
2 bytes	CRC

Synchronize

Requests that the communications process on a master terminal initiate a synchronization with its server. Different levels of synchronization can be requested in the flags field. Note that the communications process should perform a full synchronization on startup and again every few hours automatically (depending on the dial in interval

configured for the location). The total size of the framed packet will be 7 bytes.

Field Size:	Description:
1 byte	Packet Type = 0x80
1 byte	Packet Subtype = 0x0F
2 bytes	Packet Size = 7
1 byte	Flags
	Defined bits include:
	0x01 Scan file system and update W_CONTENT_CACHE table
	0x02 Synchronize the database with the server
	0x04 Synchronize subscriber records in cache
	0xFF Do full synchronization
2 bytes	CRC

Synchronize Response

Sent by the communications process on the master terminal in response to a Synchronize packet, indicating that the process will begin the synchronization as soon as possible. The total size of the framed packet will be 6 bytes.

Field Size:	Description:
1 byte	Packet Type = 0x80
1 byte	Packet Subtype = 0x10
2 bytes	Packet Size = 6
2 bytes	CRC

Receipt Validation

Receipt validation packets are traditionally sent by validation terminals, but can be sent by any authorized terminal. Receipt IDs are printed on all receipts or coupons generated at terminals. The receipt ID is printed in two formats - a bar-code symbol using the Code 39 symbology, and a 15-digit numerical string, printed in 5 groups of 3 digits.

This packet is also used to redeem receipts and loyalty points the subscriber has on account. This is typically done by game terminals, following a Subscriber Account Information query to gather the current account information.

Receipt validation packets have the following data structure:

Field Size:	Description:
1 byte	Packet Type = 0x81
1 byte	Packet Subtype = 0x02
2 bytes	Packet Size = 30
[BEGIN ENCRYPTED AREA]	
6 bytes	Validating Terminal ID
1 byte	Receipt ID length (10 or 15)
N bytes	Receipt ID
(Pad encrypted area to even 8-byte boundary with zeros)	
[END ENCRYPTED AREA]	
2 bytes	CRC

The length of the receipt data governs its format. The formats supported, and their lengths, are shown here:

Length:	Format:
10	10 Code-39 Bar-code symbols, as read from the printed receipt
14	4-byte value representing the loyalty program ID 4-byte value representing the number of points being redeemed 4-byte value representing the subscriber ID 2-byte value representing the PIN
15	15 decimal digits, as printed on the receipt
16	10 Code-39 Bar-code symbols, as read from the printed coupon 4-byte value representing the subscriber ID 2-byte value representing the PIN
21	15 digit receipt ID of coupon being redeemed 4-byte value representing the subscriber ID 2-byte value representing the PIN

The receipt ID should appear in the packet in the same order as entered or scanned from the receipt. For numeric IDs, send the ASCII code for each digit. For bar-code format, send the ASCII codes for the bar-code symbols as defined in the Code 39 bar-code symbology.

Receipt Validation Response

When the server receives a Receipt Validation query, it will attempt to validate the receipt ID in the packet, and will return this response packet with the results.

Receipt validation response packets have the following data structure:

Field Size:	Description:
1 byte	Packet Type = 0x81
1 byte	Packet Subtype = 0x03
2 bytes	Packet Size = 14 or 22
[BEGIN ENCRYPTED AREA]	
1 byte	Status indicator 0 = Coupon valid-payment authorized 1 = Coupon not found on server 2 = System error 3 = Coupon already redeemed 4 = Insufficient loyalty points 5 = Invalid loyalty program 6 = Subscriber not found 7 = Invalid PIN 8 = Subscriber account frozen
15 bytes	Authorization code (only present if status=0)
(Pad encrypted area to even 8-byte boundary with zeros)	
[END ENCRYPTED AREA]	
2 bytes	CRC

The authorization code will be an ASCII string consisting of digits only. It will always contain 15 digits.

Subscriber Information

Subscriber information queries are sent by clients when a subscriber logs on to a terminal and that subscriber's information is not in the local database cache. This query will cause table and file downloads between the query and the response.

Subscriber information request packets have the following data structure:

Field Size:	Description:
1 byte	Packet Type = 0x81
1 byte	Packet Subtype = 0x04
2 bytes	Packet Size = 38
[BEGIN ENCRYPTED AREA]	
6 bytes	Terminal ID requesting the information
1 byte	Card type used in the request 1 = ADMIN card 2 = Credit card 3 = Debit card 4 = Name 5 = Name and SSN
16 bytes	Card data
2 bytes	PIN
(Pad encrypted area to even 8-byte boundary with zeros)	

[END ENCRYPTED AREA]
2 bytes CRC

If the card type is 1 (ADMIN Cards), the card data should be filled with the 10-digit ID read from the NANI card followed by 6 spaces.

If the card type is 2 or 3 (Credit or Debit card), the card data field should be the data read from the PAN field on the card stripe (either track or track 2).

If the card type is 4 (Name), the card data field should be filled with 14 characters of the player's name followed by 2 spaces.

If the card type is 5 (Name and SSN), the card data field should be filled with 10 characters of the player's name followed by a 4-byte representation of the players SSN (treated as an integer, stored LSB first), followed by 2 spaces. This is the only case in which non-ASCII data is stored in the card data field.

Subscriber Information Response

When the server received a request for subscriber information, it will collect the information about the subscriber (if found) into table and file download packets, and transmit them to the client. When all downloads are complete, this response packet will be sent to the client. If there is an error or if the subscriber is not found in the server's database, this response will be transmitted right away.

Subscriber information response packets have the following data structure:

Field Size:	**Description:**
1 byte	Packet Type = 0x81
1 byte	Packet Subtype = 0x05
2 bytes	Packet Size = 14 or 22
[BEGIN ENCRYPTED AREA]	
6 bytes	Terminal ID requesting the information
1 byte	Status Indicator 0 = Information found - subscriber valid 1 = Information not found

2 = System error
3 = Invalid PIN
4 bytes Subscriber ID (only present if status = 0)
(Pad encrypted area to even 8-byte boundary with zeros)
[END ENCRYPTED AREA]
2 bytes CRC

If status is 0 or 3, this packet will be preceded by a one or more table and/or file download packets containing the subscriber information. When the response packet is received, all subscriber data will have been downloaded to the terminal. Responses with status codes 1 or 2 will be returned right away.

Account Withdrawal

This query is sent by clients when a subscriber requests a withdrawal of money currently on account.

Account withdrawal packets have the following data structure:

Field Size:	**Description:**
1 byte	Packet Type = 0x81
1 byte	Packet Subtype = 0x06
2 bytes	Packet Size = 22
[BEGIN ENCRYPTED AREA]	
6 bytes	Terminal ID requesting the transaction
4 bytes	Subscriber ID
2 bytes	PIN number entered by subscriber
4 bytes	Amount to be withdrawn (in US cents)
(Pad encrypted area to even 8-byte boundary with zeros)	
[END ENCRYPTED AREA]	
2 bytes	CRC

The server will enforce limits on the maximum and minimum amounts for which a withdrawal can be made.

Account Withdrawal Response

When an account withdrawal request is made, the server will attempt to perform the withdrawal, then will send this response packet to the client with the results.

Account withdrawal response packets have the following data structure:

Field Size:	**Description:**
1 byte	Packet Type = 0x81
1 byte	Packet Subtype = 0x07
2 bytes	Packet Size = 22 or 38

[BEGIN ENCRYPTED AREA]
6 bytes Terminal ID performing the withdrawal
4 bytes Subscriber ID
1 byte Status indicator
0 = Withdrawal authorized
1 = Insufficient funds
2 = Subscriber not found on server
3 = Invalid PIN
4 = Account frozen
5 = System error
6 = Invalid amount
15 bytes Authorization ID for withdrawal (only present if status = 0)
4 bytes New account balance, in US cents (only present if status = 0)
(Pad encrypted area to even 8-byte boundary with zeros)
[END ENCRYPTED AREA]
2 bytes CRC

Account Deposit

This query is sent by the clients when a subscriber requests a deposit of money to his or her own ADMIN account.

Account deposit packets have the following data structure:

Field Size:	**Description:**
1 byte	Packet Type = 0x81
1 byte	Packet Subtype = 0x08
2 bytes	Packet Size = 22
[BEGIN ENCRYPTED AREA]	
6 bytes	Terminal ID requesting the transaction
4 bytes	Subscriber ID
2 bytes	PIN number entered by subscriber
4 bytes	Amount to be deposited (in US cents)
[END ENCRYPTED AREA]	
2 bytes	CRC

Account Deposit Response

When an account deposit request is made, the server will attempt to perform the deposit, then will send this response packet to the client with the results.

Account deposit response packets have the following data structure:

Field Size:	**Description:**
1 byte	Packet Type = 0x81
1 byte	Packet Subtype = 0x09
2 bytes	Packet Size = 22 or 38

[BEGIN ENCRYPTED AREA]
6 bytes Terminal ID performing the withdrawal
4 bytes Subscriber ID
1 byte Status indicator
0 = Deposit accepted
1 = Account limit exceeded
2 = Subscriber not found on server
3 = Invalid PIN
4 = Account frozen
5 = System error
6 = Invalid amount
15 bytes Authorization ID for deposit (only present if status = 0)
4 bytes New account balance, in US cents (only present if status = 0)
(Pad encrypted area to even 8-byte boundary with zeros)
[END ENCRYPTED AREA]
2 bytes CRC

Subscriber Account Data Request

This query is sent by clients when a subscriber requests a full report on his or her current account status.

Subscriber account data request packets have the following data structure:

Field Size:	**Description:**
1 byte	Packet Type = 0x81
1 byte	Packet Subtype = 0x0A
2 bytes	Packet Size = 22
[BEGIN ENCRYPTED AREA]	
6 bytes	Terminal ID
4 bytes	Subscriber ID
2 bytes	PIN
(Pad encrypted area to even 8-byte boundary with zeros)	
[END ENCRYPTED AREA]	
2 bytes	CRC

Subscriber Account Data Response

When the server received an account data request, it collects the information about the subscriber's account and sends this response packet.

Subscriber account data response packets have the following data structure:

Field Size:	**Description:**
1 byte	Packet Type = 0x81
1 byte	Packet Subtype = 0x0B
2 bytes	Packet Size = 22 or 38+

```
[BEGIN ENCRYPTED AREA]
6 bytes      Terminal ID
4 bytes      Subscriber ID
1 byte       Status Indicator
                  0 = Success
                  1 = Account Frozen
                  2 = Subscriber not found
                  3 = Invalid PIN
                  4 = System error
4 bytes      Account balance (in US cents)(on success)
4 bytes      Amount withdrawn pending confirmation (in US
             cents)(on success)
2 bytes      Number of outstanding orders (on success)
      6 bytes     Order ID (on success)
     40 bytes     Item name (on success)
      4 bytes     Date and time order received (on success)
      4 bytes     Date and time order sent to supplier (on
                  success)
      4 bytes     Expected ship date and time (on success)
      4 bytes     Date and time order shipped (on success)
      4 bytes     Date and time order canceled (on success)
2 bytes      Number of coupons (on success)
      4 bytes     Coupon ID (on success)
     40 bytes     Description (on success)
      6 bytes     Receipt ID (on success)
      4 bytes     Face value (on success)
      4 bytes     Expiration date (on success)
2 bytes      Number of loyalty programs (on success)
      4 bytes     Loyalty program ID (on success)
     40 bytes     Loyalty program name (on success)
     20 bytes     Loyalty point label (on success)
      4 bytes     Number of points (on success)
(Pad encrypted area to even 8-byte boundary with zeros)
[END ENCRYPTED AREA]
2 bytes      CRC
```

Winning Redemption Play

When a redemption game has been played that awards a prize, and the prize has a limited number of units available (a non-zero value for the NUM_REMAINING field in the database), or that wins a prize that includes a pool amount, the terminal should immediately issue this query to update its local prize information.

This packet permits prize pools to be maintained across several locations, without the chance that more prizes that are available will be given out. It also allows the server to update the local pool value so players can see pool contributions from multiple locations.

Winning redemption play packets have the following

data structure:

Field Size:	Description:
1 byte	Packet Type = 0x81
1 byte	Packet Subtype = 0x0C
2 bytes	Packet Size = 38+
[BEGIN ENCRYPTED AREA]	
4 bytes	Subscriber ID playing the redemption game (LSB first)
6 bytes	Terminal ID on which the redemption game was played
4 bytes	Service ID on which redemption game was played (LSB first)
1 byte	Player Station(8 bit flags, position 0 = station 1, etc.)
1 byte	Active Stations (8 bit flags, position 0 = station 1, etc.)
4 bytes	Start Date and Time (UTC format, LSB first)
4 bytes	End Date and Time (UTC format, LSB first)
1 byte	Flags
	0x01 Equipment failed during game
	0x02 Score is invalid
1 byte	Number of statistics (n)
[BEGIN REPEATING LIST]	
4 bytes	Statistic ID (LSB first)
4 bytes	Statistic Value (LSB first)
[END REPEATING LIST]	
1 byte	Number of redemption games entered with the play (m)
[BEGIN REPEATING LIST]	
4 bytes	Redemption ID (LSB first)
2 bytes	Par level beaten (LSB first)
4 bytes	Par score beaten (LSB first)
4 bytes	Derived score achieved by subscriber (LSB first)
4 bytes	Prize ID awarded (LSB first)
[END REPEATING LIST]	
(Pad encrypted area to even 8-byte boundary with zeros)	
[END ENCRYPTED AREA]	
2 bytes	CRC

The subscriber ID may be 0 if the redemption game is unidentified.

Winning Redemption Play Response

When a winning redemption play query is received at the server, it will adjust the number of the awarded prizes remaining (if that number is limited), and/or it will calculate the pool amount to award to the player based on the current value of the collective prize pool. (If the par level has an associated pool amount). It will send this response packet back to the terminal, indicating the amount of the pool the player should be awarded and updating the pool value and number of prizes

remaining as appropriate.

Winning redemption play response packets have the following data structure:

Field Size:	Description:
1 byte	Packet Type = 0x81
1 byte	Packet Subtype = 0x0D
2 bytes	Packet Size = 14+
[BEGIN ENCRYPTED AREA]	
4 bytes	Current pool value (LSB first)
1 byte	Number of par levels being updated (n)
[BEGIN REPEATING LIST]	
4 bytes	Redemption ID being updated (LSB first)
2 bytes	Par level being updated (LSB first)
4 bytes	New pool value (after award) (LSB first)
4 bytes	Pool amount to award (LSB first)
4 bytes	Number of prizes remaining (LSB first)
[END REPEATING LIST]	
(Pad encrypted area to even 8-byte boundary with zeros)	
[END ENCRYPTED AREA]	
2 bytes	CRC

Subscriber ID Request

A subscriber ID request is used when a terminal needs to register a new player who does not have a NANI card. It generates a unique, unassigned subscriber ID that the player's card data can be associated with.

Subscriber ID request packets have no data. The packet header is sufficient to convey the request.

Field Size:	Description:
1 byte	Packet Type = 0x81
1 byte	Packet Subtype = 0x0E
2 bytes	Packet Size = 6
2 bytes	CRC

Subscriber ID Response

Upon completion, this request will have registered this ID as "allocated but unassigned". When the player registers, the terminal should send in a New Subscriber Event to assign the ID to the player.

Subscriber ID response packets have the following

data structure:

Field Size:	Description:
1 byte	Packet Type = 0x81
1 byte	Packet Subtype = 0x0F
2 bytes	Packet Size = 14
[BEGIN ENCRYPTED AREA]	
1 byte	Status Code 0 = Success 1 = Failure
4 bytes	Subscriber ID (only present on success)
(Pad encrypted area to even 8-byte boundary with zeros)	
[END ENCRYPTED AREA]	
2 bytes	CRC

Credit/Debit Request

This request is issued by a terminal when a player presents a credit or debit card and requests that money be transferred on to the terminal for play, or into the player's account.

Credit/debit request packets have the following data structure:

Field Size:	Description:
1 byte	Packet Type = 0x81
1 byte	Packet Subtype = 0x10
2 bytes	Packet Size = 46
[BEGIN ENCRYPTED AREA]	
6 bytes	Terminal ID requesting the transaction
4 bytes	Subscriber ID
2 bytes	PIN (LSB first)
1 byte	Card format (FC from track 1 stripe)
16 bytes	Card data (PAN code from track 1 stripe)
4 bytes	Expiration date (4 bytes of addition data from track 1 stripe)
2 bytes	Debit PIN (LSB first, zero for credit cards)
4 bytes	Amount to be withdrawn (in US cents, LSB first)
1 byte	Disposition 0 = Place in subscriber account 1 = Credit local terminal
(pad encrypted area to even 8-byte boundary with zeros)	
[END ENCRYPTED AREA]	
2 bytes	CRC

The card format, card data and expiration date fields should all appear exactly as read from the magnetic stripe on the card. The PIN should be entered by the

player for debit cards only.

Credit/Debit Response

When a credit/debit request is received at the server, it will validate the player's subscriber information and eligibility to perform this type of request, then will attempt to authenticate the request through a credit processing system. Finally, it will transmit this response packet to the terminal with the results.

Credit/Debit response packets have the following data structure:

Field Size:	**Description:**
1 byte	Packet Type = 0x81
1 byte	Packet Subtype = 0x11
2 bytes	Packet Size = 22 or 46
[BEGIN ENCRYPTED AREA]	
6 bytes	Terminal ID performing the transaction
4 bytes	Subscriber ID
1 byte	Status indicator 0 = Credit approved 1 = Invalid card 2 = Credit limit exceeded 3 = Account would exceed limit 4 = Account frozen 5 = Invalid amount 6 = Invalid PIN 7 = Subscriber not found 8 = System error
1 byte	Disposition (only present if status = 0) 0 = Placed in subscriber account 1 = Credit local terminal
4 bytes	Amount (only present of status = 0)
15 bytes	Authorization ID for the transaction (only present if status = 0)
4 bytes	New account balance (only present if status = 0)
(Pad encrypted area to even 8-byte boundary with zeros)	
[END ENCRYPTED AREA]	
2 bytes	CRC

The terminal ID and subscriber ID will be copied from the request packet, to verify that the response matches the request. The authorization ID will consist of 15 ASCII digits.

Save State Request

This request is used when a player wants to save the state of a game or other service (including the user interface shell) for later restoration (on this or another terminal).

Save State request packets have the following data structure:

Field Size:	Description:
1 byte	Packet Type = 0x81
1 byte	Packet Subtype = 0x12
2 bytes	Packet Size = 46
[BEGIN ENCRYPTED AREA]	
6 bytes	Terminal ID on which the state is being saved
4 bytes	Subscriber ID
2 bytes	PIN
4 bytes	Service ID
1 byte	Slot Number
20 bytes	Save State Name
(Pad encrypted area to even 8-byte boundary with zeros)	
[END ENCRYPTED AREA]	
2 bytes	CRC

This packet is sent to the server to obtain a File ID. That file ID can then be used to upload the save state file to the server.

Save State Response

When the server receives a save state request packet, it allocates a file ID for the save state and returns the ID to the terminal in this response packet. It also provides the terminal with a pathname that the terminal should move the file to. This will ensure the integrity of the subscriber cache.

Save State response packets have the following data structure:

Field Size:	Description:
1 byte	Packet Type = 0x81
1 byte	Packet Subtype = 0x13
2 bytes	Packet Size = 22
[BEGIN ENCRYPTED AREA]	
6 bytes	Terminal ID on which the state is being saved
4 bytes	Subscriber ID

```
1 byte          Status Indicator
                       0 = Ready for upload
                       1 = Account storage allocation
                         exceeded
                       2 = Subscriber not found on server
                       3 = Invalid PIN
                       4 = Service not found on server
                       5 = Account frozen
                       6 = System error
4 bytes         File ID (only present if status = 0)
60 bytes        Local pathname (only present if status = 0)
(Pad encrypted area to even 8-byte boundary with zeros)
[END ENCRYPTED AREA]
2 bytes         CRC
```

The terminal ID and subscriber ID will be copied from the request packet, to verify that the response matches the request.

The terminal is then free to use the file upload protocol to send the file.

Restore State Request

This request is issued when a player wants to restore a state that was saved previously on this or another terminal. The server will return the File ID of the save state file, and if the download flag indicates a download is required, it will download the save state file between the request and the response.

Restore State request packets have the following data structure:

```
Field Size:     Description:
1 byte          Packet Type = 0x81
1 byte          Packet Subtype = 0x14
2 bytes         Packet Size = 30
[BEGIN ENCRYPTED AREA] = 17
6 bytes         Terminal ID on which the state is being
                restored
4 bytes         Subscriber ID
2 bytes         PIN
4 bytes         Service ID
1 byte          Slot number
1 byte          Download flag
                       0 = Do not download the save state
                        file
                       1 = Download the file if it exists
(Pad encrypted area to even 8-byte boundary with zeros)
```

[END ENCRYPTED AREA]
2 bytes CRC

Even if the file exists on the local machine, this request should be made before the player is allowed to load it, to assure the player is authenticated as the owner of the data, and also to verify the File ID of the save state file as stored in the SUBSCRIBER_SAVE_STATE table.

Restore State Response

When the server received a restore state request, it will search for the saved state data, validate the integrity of the file, and return the file ID to the client. If the client requested a download of the file, the file will be transmitted before the response is returned.

Restore State response packets have the following data structure:

Field Size: Description:
1 byte Packet Type = 0x81
1 byte Packet Subtype = 0x15
2 bytes Packet Size = 14
[BEGIN ENCRYPTED AREA]
1 byte Status Indicator
0 = Permission to use save state granted
1 = Requested save state not found on server
2 = Subscriber not found on server
3 = Invalid PIN
4 = Service not found on server
5 = Account frozen
6 = System error
4 bytes File ID (only present if status = 0)
(Pad encrypted area to even 8-byte boundary with zeros)
[END ENCRYPTED AREA]
2 bytes CRC

New Subscriber Card Request

This request is used to associate a new card number with an existing subscriber. This allows players to use multiple cards (including their name or name/SSN combination) to identify themselves to the network.

This request will succeed only if the new card ID is unique throughout the entire ADMIN network.

New Subscriber Card request packets have the following data structure:

Field Size:	Description:
1 byte	Packet Type = 0x81
1 byte	Packet Subtype = 0x16
2 bytes	Packet Size = 38
[BEGIN ENCRYPTED AREA]	
6 bytes	Terminal ID
4 bytes	Subscriber ID
2 bytes	PIN
1 byte	Card Type 1 = NANI card 2 = Credit card 3 = Debit card 4 = Name 5 = Name and SSN
16 bytes	Card Data
(Pad encrypted area to even 8-byte boundary with zeros)	
[END ENCRYPTED AREA]	
2 bytes	CRC

New Subscriber Card Response

When a new subscriber card request is received by the server, it will validate the uniqueness of the card data and create a new card record for the subscriber, returning the result in this packet.

New Subscriber Card response packets have the following data structure:

Field Size:	Description:
1 byte	Packet Type = 0x81
1 byte	Packet Subtype = 0x17
2 bytes	Packet Size = 22
[BEGIN ENCRYPTED AREA]	
6 bytes	Terminal ID
4 bytes	Subscriber ID
1 byte	Status indicator 0 = Card added successfully 1 = Card is registered to another subscriber 2 = Subscriber not found on server 3 = Invalid PIN 4 = Card already registered to this subscriber 5 = Account frozen 6 = System error

(Pad encrypted area to even 8-byte boundary with zeros)
[END ENCRYPTED AREA]
2 bytes CRC

Reserve Merchandise

Reserve merchandise request packets are used to reserve an item of merchandise. The requester can specify attribute values for the item, which the server will try to match.

Reserve merchandise request packets have the following data structure:

Field Size:	Description:
1 byte	Packet Type = 0x81
1 byte	Packet Subtype = 0x18
2 bytes	Packet Size = 38+
[BEGIN ENCRYPTED AREA]	
6 bytes	Terminal ID
4 bytes	Subscriber ID
2 bytes	PIN
4 bytes	Item ID to reserve
4 bytes	Quantity to reserve
4 bytes	Price offered
1 byte	Number of attributes
1 byte	Attribute ID
2 bytes	Attribute data size
Variable	Attribute data
(Pad encrypted area to even 8-byte boundary with zeros)	
[END ENCRYPTED AREA]	
2 bytes	CRC

Reserve Merchandise Response

Reserve Merchandise response packets indicate to the requester whether the reservation was successful, and if so, what the actual attribute values of the reserved item is. If the requested quantity could not be met, the largest quantity that could be reserved is returned.

Reserve Merchandise response packets have the following data structure:

Field Size:	Description:
1 byte	Packet Type = 0x81
1 byte	Packet Subtype = 0x19
2 bytes	Packet Size = 38+
[BEGIN ENCRYPTED AREA]	
6 bytes	Terminal ID
4 bytes	Subscriber ID

```
4 bytes      Item ID being reserved
1 byte       Status code
                0     Reservation successful
                1     No items remain in inventory
                2     Invalid request
                3     System error
4 bytes      Quantity reserved (on success)
4 bytes      Price of reserved items (on success)
6 bytes      Reservation ID (on success)
1 byte       Number of attributes
         1 byte       Attribute ID
         2 bytes      Attribute data size
         Variable     Attribute data
(Pad encrypted area to even 8-byte boundary with zeros)
[END ENCRYPTED AREA]
2 bytes      CRC
```

Purchase Merchandise

Purchase merchandise request packets are used to purchase merchandise that was previously reserved with a Reserve merchandise query. The requester can specify attribute values for the item, which the server will try to match.

Purchase merchandise request packets have the following data structure:

```
Field Size:  Description:
1 byte       Packet Type = 0x81
1 byte       Packet Subtype = 0x1A
2 bytes      Packet Size = 30+
[BEGIN ENCRYPTED AREA]
6 bytes      Terminal ID
4 bytes      Subscriber ID
2 bytes      PIN
6 bytes      Reservation ID (on success)
4 bytes      Purchase price
(Pad encrypted area to even 8-byte boundary with zeros)
[END ENCRYPTED AREA]
2 bytes      CRC
```

Purchase Merchandise Response

Purchase Merchandise response packets verify to the requester that the purchase has been processed by the server and that the money should be deducted from the player's funds (either account fees or cash).

Purchase merchandise response packets have the following data structure:

Field Size:	Description:
1 byte	Packet Type = 0x81
1 byte	Packet Subtype = 0x1B
2 bytes	Packet Size = 22 or 30
[BEGIN ENCRYPTED AREA]	
6 bytes	Terminal ID
4 bytes	Subscriber ID
1 byte	Status code
	0 Purchase successful
	1 No items remain in inventory
	2 Invalid request
	3 System error
6 bytes	Order ID (on success)
(Pad encrypted area to even 8-byte boundary with zeros)	
[END ENCRYPTED AREA]	
2 bytes	CRC

Release Merchandise

Release merchandise request packets are used to release merchandise that was previously reserved with a Reserve merchandise query. The requester can specify attribute values for the item, which the server will try to match.

Purchase merchandise request packets have the following data structure:

Field Size:	Description:
1 byte	Packet Type = 0x81
1 byte	Packet Subtype = 0x1C
2 bytes	Packet Size = 30
[BEGIN ENCRYPTED AREA]	
6 bytes	Terminal ID
4 bytes	Subscriber ID
2 bytes	PIN
6 bytes	Reservation ID (on success)
(Pad encrypted area to even 8-byte boundary with zeros)	
[END ENCRYPTED AREA]	
2 bytes	CRC

Release Merchandise Response

Release merchandise response packets verify to the requester that reserved merchandise has been released.

Purchase merchandise response packets have the following data structure:

Field Size:	Description:
1 byte	Packet Type = 0x81
1 byte	Packet Subtype = 0x1D

```
2 bytes      Packet Size = 30
[BEGIN ENCRYPTED AREA]
6 bytes      Terminal ID
4 bytes      Subscriber ID
6 bytes      Reservation ID
1 byte       Status code
                0     Release successful
                1     Invalid request
                2     System error
(Pad encrypted area to even 8-byte boundary with zeros)
[END ENCRYPTED AREA]
2 bytes      CRC
```

Subscriber Ranking Request

A request for a subscriber's current ranking in one or more tournament brackets. This can be used to request ranking in brackets that have ended and are beyond their posting period.

Subscriber ranking request packets have the following data structure:

```
Field Size:  Description:
1 byte       Packet Type = 0x81
1 byte       Packet Subtype = 0x1D
2 bytes      Packet Size = 30+
[BEGIN ENCRYPTED AREA]
6 bytes      Terminal ID
4 bytes      Subscriber ID
2 bytes      PIN
1 byte       Number of tournament brackets
        4 bytes      Tournament ID
        1 byte       Bracket ID
(Pad encrypted area to even 8-byte boundary with zeros)
[END ENCRYPTED AREA]
2 bytes      CRC
```

Subscriber Ranking Response

The response to the subscriber ranking request packet. This packet contains the subscriber's current position and ranking score in each of the requested tournament brackets that the subscriber has participated in. If the subscriber has not yet played in one of the requested brackets, or the bracket is not found on the server, it will not be included in the list.

Subscriber ranking response packets have the

following data structure:

Field Size:	Description:
1 byte	Packet Type = 0x81
1 byte	Packet Subtype = 0x1E
2 bytes	Packet Size = 22
[BEGIN ENCRYPTED AREA]	
1 byte	Status
	0 = Query succeeded
	1 = Account frozen
	2 = Subscriber not found
	3 = Invalid PIN
	4 = System error
4 bytes	Subscriber ID
1 byte	Number of tournament brackets
4 bytes	Tournament ID
1 byte	Bracket ID
2 bytes	Rank
4 bytes	Score
4 bytes	Score Date and Time
(Pad encrypted area to even 8-byte boundary with zeros)	
[END ENCRYPTED AREA]	
2 bytes	CRC

Event Packets

Event packets are transmitted on sockets connected to the Event services IP port, or over an asynchronous POS network connection. In either case, they use a transmit-ack lockstep exchange. The client transmits an event packet, the server responds with an Ack. If the server does not respond within 1 second, the client resends the event packet up to 5 times, then fails and moves on to its next event. If the server sends a Nak, the packet should be resent right away. These timeouts may need to be tuned for Internet-based transmission.

The entire data portion of the event packet is encrypted using the encryption parameters negotiated for the connection.

Alarm

Alarm event packets have the following data structure:

Field Size:	Description:
1 byte	Packet Type = 0x82
1 byte	Packet Subtype = 0x00

2 bytes	Packet Size
[BEGIN ENCRYPTED AREA]	
6 bytes	Terminal ID of the machine reporting the alarm
2 bytes	Alarm code being reported (LSB first). Currently defined values are shown below.
4 bytes	Time the alarm was reported (UTC format, LSB first)
1 byte	Flag indicating whether the alarm was handled by the terminal (1 if the terminal handled the alarm with a local handler)
2 bytes	Alarm data size (LSB first)
Variable	Alarm data. The content of this field depends on the alarm type. The formats for each defined alarm code are shown below.
(Pad data portion of packet to even 8-byte boundary with zeros)	
[END ENCRYPTED AREA]	
2 bytes	CRC

Alarm Code:	**Meaning:**	**Data:**
1	Hard reset (power up)	None
2	Soft reset	None
3	Hardware failure	ASCII diagnostic message (optional)
4	Firmware failure	ASCII diagnostic message (optional)
5	Bill acceptor full	None
6	Coin jam	None
7	Bill jam	None
8	Network disabled	None
12	Game time-out	None
13	Hard drive full	None
18	Printer error	None
19	Printer paper low	None
22	Cable disconnected	ASCII diagnostic message (optional)
23	Security alarm	Binary position of switch positions (use 32 bits)
24	Enabled by technician	Technician ID enabling terminal
25	Disabled by technician	Technician ID disabling terminal
26	Immediate call requested	None
27	Queue entry aged	None
29	Serial number changed	None

Alarm events are queued to the server as soon as they

are detected. Alarms of the following types are considered critical and should be transmitted right away:

Hardware failure	Firmware failure
Bill acceptor full	Coin jam
Bill jam	Printer error
Cable disconnected	Security alarm
Immediate call request	

Tournament Play

Tournament play event packets have the following data structure:

Field Size:	**Description:**
1 byte	Packet Type = 0x82
1 byte	Packet Subtype = 0x01
2 bytes	Packet Size
[BEGIN ENCRYPTED AREA]	
4 bytes	Subscriber ID playing the tournament game (LSB first)
6 bytes	Terminal ID on which the tournament game was played
4 bytes	Service ID on which tournament game was played (LSB first)
1 byte	Player Station (8 bit flags, position 0 = station 1, etc.)
1 byte	Active Station (8 bit flags, position 0 = station 1, etc.)
4 bytes	Start Date and Time (UTC format, LSB first)
4 bytes	End Date and Time (UTC format, LSB first)
1 byte	Flags
	0x01 Equipment failed during game
	0x02 Score is invalid
	0x04 Player should be disqualified
1 byte	Number of statistics (n)
4 bytes	Statistic ID (LSB first)
4 bytes	Statistic Value (LSB first)
...	
1 byte	Number of tournament games entered with the play (m)
4 bytes	Tournament ID entered (LSB first)
1 byte	Bracket ID entered
4 bytes	Derived score achieved by subscriber (LSB first)
...	
(Pad data portion of packet to even 8-byte boundary with zeros)	
[END ENCRYPTED AREA]	
2 bytes	CRC

Redemption Play

Redemption play event packets have the following data structure:

Field Size:	Description:
1 byte	Packet Type = 0x82
1 byte	Packet Subtype = 0x02
2 bytes	Packet Size
[BEGIN ENCRYPTED AREA]	
4 bytes	Subscriber ID playing redemption game (LSB first)
6 bytes	Terminal ID on which redemption game was played
4 bytes	Service ID on which redemption game was played (LSB first)
1 byte	Player Station (8 bit flags, position 0 = station 1, etc.)
1 byte	Active Stations (8 bit flags, position 0 = station 1, etc.)
4 bytes	Start Date and Time (UTC format, LSB first)
4 bytes	End Date and Time (UTC format, LSB first)
1 byte	Flags
	0x01 Equipment failed during game
	0x02 Score is invalid
1 byte	Number of statistics (n)
4 bytes	Statistic ID (LSB first)
4 bytes	Statistic Value (LSB first)
...	
1 byte	Number of redemption games entered with the play (m)
4 bytes	Redemption ID (LSB first)
2 bytes	Par level beaten (LSB first)
4 bytes	Par score beaten (LSB first)
4 bytes	Derived score achieved by subscriber (LSB first)
4 bytes	Pool amount awarded (LSB first)
...	
(Pad data portion of packet to even 8-byte boundary with zeros)	
[END ENCRYPTED AREA]	
2 bytes	CRC

Meter Readings

Meter readings event packets have the following data structure:

Field Size:	Description:
1 byte	Packet Type = 0x82
1 byte	Packet Subtype = 0x03
2 bytes	Packet Size

[BEGIN ENCRYPTED AREA]
6 bytes Terminal ID on which the meters were collected
4 bytes The date and time meters were collected (in UTC format, LSB first)
2 bytes Number of terminal meters included (LSB first) (n)
    4 bytes Terminal Meter ID (LSB first)
    4 bytes Terminal Meter Value (LSB first)
...
2 bytes Number of service meters (LSB first) (m)
    4 bytes Service ID of the meter (LSB first)
    4 bytes Meter ID of the meter (LSB first)
    4 bytes Meter Value of the meter (LSB first)
...
(Pad data portion of packet to even 8-byte boundary with zeros)
[END ENCRYPTED AREA]
2 bytes CRC

Terminal manufacturers should support as many of the following pre-defined terminal meter IDs as possible, as well as any additional meters available:

Meter ID:	Meaning:
1	Left slot coins in
2	Right slot coins in
3	3rd slot coins in
4	4th slot coins in
5	Paid credits
6	Total collection (in cents)
7	Service credits
8	Total plays
9	Total uptime (minutes)
10	Number of hard resets
11	Number of soft resets

Terminal meters should never reset to zero. They should accumulate in 32-bit fields over the lifetime of the terminal. Relative values will be computed between two consecutive readings at the database.

Ad Statistics

Ad statistics event packets have the following data structure:

Field Size:	Description:
1 byte	Packet Type = 0x82
1 byte	Packet Subtype = 0x04
2 bytes	Packet Size

[BEGIN ENCRYPTED AREA]

```
6 bytes      Terminal ID on which the statistics were
             collected
4 bytes      The date and time statistics were collected
             (in UTC format, LSB first)
2 bytes      Number of unidentified ads (n)
    4 bytes     Target ID (LSB first)
    4 bytes     Number of plays
...
2 bytes      Number of identified ad exposures (LSB first)
             (m)
    4 bytes     Target ID (LSB first)
    4 bytes     Subscriber ID (LSB first)
    4 bytes     Date and time the ad was played (UTC
                format, LSB first)
...
(Pad data portion of packet to even 8-byte boundary with
zeros)
[END ENCRYPTED AREA]
2 bytes      CRC
```

Ad statistics are accumulated on each terminal and queued at midnight each night (or whenever the terminal detects the current day has changed, in case it is powered off at midnight). The packet reports all ad plays for the day. As soon as this packet is queued, the ad play records can be deleted from the terminal, and a new day's record keeping begun. The queued entry must not be deleted until successfully received at the server and acknowledged.

Service Accesses

Service accesses event packets have the following data structure:

```
Field Size:  Description:
1 byte       Packet Type = 0x82
1 byte       Packet Subtype = 0x05
2 bytes      Packet Size
[BEGIN ENCRYPTED AREA]
6 bytes      Terminal ID on which the statistics were
             collected
4 bytes      The date and time statistics were collected
             (in UTC format, LSB first)
2 bytes      Number of service accesses being reported
             (LSB first) (n)
    4 bytes     Service ID being accessed (LSB first)
    1 byte      Profile used
    4 bytes     Start date and time of access (UTC format,
```

LSB first)
4 bytes End date and time of access (UTC format, LSB first)
4 bytes Subscriber ID (LSB first)
4 bytes Cash funds used (LSB first)
4 bytes Account funds used (LSB first)
...
(Pad data portion of packet to even 8-byte boundary with zeros)
[END ENCRYPTED AREA]
2 bytes CRC

This packet tracks all accesses to any service on the terminal. Each time a player plays a game or engages in a session in any other service, the data should be stored. This packet should be generated each evening at midnight for the day's service accesses (or whenever the terminal detects the current day has changed).

Down Time

Down time event packets have the following data structure:

Field Size:	Description:
1 byte	Packet Type = 0x82
1 byte	Packet Subtype = 0x06
2 bytes	Packet Size
[BEGIN ENCRYPTED AREA]	
6 bytes	Terminal ID on which the down times are being reported
4 bytes	The date and time down times were reported (in UTC format, LSB first)
2 bytes	Number of down times being reported (LSB first) (n)
4 bytes	Technician ID responsible for the down time (LSB first)
4 bytes	Start date and time of down time (UTC format, LSB first)
4 bytes	End date and time of down time (UTC format, LSB first)

...
(Pad data portion of packet to even 8-byte boundary with zeros)
[END ENCRYPTED AREA]
2 bytes CRC

This packet tracks all down times experienced by a terminal. Games should periodically update some non-volatile timestamp while they are running, and then test

this value on powerup to see how long the power outage was, and report this as down time. When a technician administratively takes the game down through a service menu, this is also logged in this packet. This packet should be generated each evening at midnight for the day's down times (or whenever the terminal detects the current day has changed).

New Subscriber

New subscriber event packets have the following data structure:

Field Size:	**Description:**
1 byte	Packet Type = 0x82
1 byte	Packet Subtype = 0x07
2 bytes	Packet Size
[BEGIN ENCRYPTED AREA]	
6 bytes	Terminal ID on which the subscriber registered
4 bytes	Subscriber ID being registered (LSB first)
26 bytes	Alias entered by the subscriber
26 bytes	Street address entered by the subscriber
10 bytes	Postal code entered by the subscriber
10 bytes	Phone number entered by the subscriber
20 bytes	First name entered by subscriber
20 bytes	Last name entered by subscriber
2 bytes	Middle initial entered by subscriber
1 byte	Birth day entered by subscriber
1 byte	Birth month entered by subscriber
2 bytes	Birth year entered by subscriber (LSB first)
1 byte	Gender entered by subscriber (0 = male, 1 = female)
9 bytes	SSN entered by subscriber
2 bytes	PIN entered by the subscriber
1 byte	Number of cards to register
1 byte	Card Type 1 = ADMIN card 2 = Credit card 3 = Debit card 4 = Name 5 = Name and SSN
16 bytes	Card Data
...	
(Pad data portion of packet to even 8-byte boundary with zeros)	
[END ENCRYPTED AREA]	
2 bytes	CRC

New subscriber events are queued when players register a new card. They are queued at the time the data is entered, but do not need to be sent right away. However, if the player subsequently plays any games that generate queue entries, the terminal must ensure that this event is transmitted to the server before any game plays for that player. This is to ensure that the server has established an account for the player before attaching a game play to it.

Any of the registered cards that are included in the packet that already exist on the server or fail for some other reason will be skipped, but the subscriber will be created regardless. A card of type "NANI Card" with a card ID equal to the value of the subscriber ID will be created automatically.

New Team

New team event packets have the following data structure:

Field Size:	**Description:**
1 byte	Packet Type = 0x82
1 byte	Packet Subtype = 0x08
2 bytes	Packet Size
[BEGIN ENCRYPTED AREA]	
6 bytes	Terminal ID on which the subscriber registered
4 bytes	Subscriber ID of team being registered (LSB first)
26 bytes	Alias entered by the team
2 bytes	PIN entered for team
1 byte	Number of members
4 bytes	Subscriber ID
1 byte	Flags
...	
(Pad data portion of packet to even 8-byte boundary with zeros)	
[END ENCRYPTED AREA]	
2 bytes	CRC

New team events are queued when teams register. They are queued at the time the data is entered, but do not need to be sent right away. However, if the team subsequently plays any games that generate queue entries,

the terminal must ensure that this event is transmitted to the server before any game plays for that team. This is to ensure that the server has established an account for the team before attaching a game play to it.

Issued Coupons

Issued coupons event packets have the following data structure:

Field Size:	Description:
1 byte	Packet Type = 0x82
1 byte	Packet Subtype = 0x09
2 bytes	Packet Size
[BEGIN ENCRYPTED AREA]	
6 bytes	Terminal ID on which the down times are being reported
2 bytes	Number of coupons being reported (LSB first) (n)
4 bytes	Coupon ID issued (LSB first)
4 bytes	Subscriber ID coupon was issued to (LSB first)
4 bytes	Date and time coupon was issued (UTC format, LSB first)
6 bytes	Receipt ID
1 byte	Flags
...	
(Pad data portion of packet to even 8-byte boundary with zeros)	
[END ENCRYPTED AREA]	
2 bytes	CRC

This packet tracks all coupons issued by a terminal. This packet should be generated each night at midnight for the day's coupons (or whenever the terminal detects the current day has changed).

Loyalty Point Awards

Loyalty point award event packets have the following data structure:

Field Size:	Description:
1 byte	Packet Type = 0x82
1 byte	Packet Subtype = 0x0A
2 bytes	Packet Size
[BEGIN ENCRYPTED AREA]	
6 bytes	Terminal ID on which the awards are being reported
2 bytes	Number of awards being reported (LSB first) (n)

```
        4 bytes     Subscriber ID receiving the award (LSB
                    first)
        4 bytes     Loyalty Program ID (LSB first)
        2 bytes     Number of points awarded (LSB first)
        4 bytes     Date and time the award was made (UTC
                    format, LSB first)
...
(Pad data portion of packet to even 8-byte boundary with
zeros)
[END ENCRYPTED AREA]
2 bytes      CRC
```

This packet tracks all loyalty points awarded by a terminal. This packet should be generated each evening at midnight for the day's awards (or whenever the terminal detects the current day has changed).

Synchronization Packets

Inventory

Inventory packets have the following data structure:

```
Field Size:  Description:
1 byte       Packet Type = 0x83
1 byte       Packet Subtype = 0x00
2 bytes      Packet Size
[BEGIN ENCRYPTED AREA]
6 bytes      Terminal ID issuing the request (or 0 for
             server inventories)
2 bytes      System software version (LSB first)
2 bytes      Number of records (LSB first) (n)
    1 byte      Table ID the record belongs to
    4 bytes     Record ID
...
2 bytes      Number of files (LSB first) (m)
    4 bytes     File ID (LSB first)
...
2 bytes      Number of content objects (LSB first) (m)
    4 bytes     Content ID (LSB first)
...
(Pad encrypted area to even multiple of 8 bytes)
[END ENCRYPTED AREA]
2 bytes      CRC
```

Data is guaranteed to be in order of ascending table ID, but not necessarily in order of ascending record ID within each table ID.

Table Download

Downloaded table records are inserted directly into the database, using the record ID as a key. Any existing

records with the same record ID are overwritten. A table download packet with 0 records is used to indicate no more data.

Table download packets have the following data structure:

Field Size:	Description:
1 byte	Packet Type = 0x83
1 byte	Packet Subtype = 0x01
2 bytes	Packet Size
[BEGIN ENCRYPTED AREA]	
1 byte	Table ID being downloaded
2 bytes	Number of records (LSB first) (n)
6 bytes	Record ID of a record in the table (LSB first)
2 bytes	Record data size (in bytes, LSB first)
Variable	Record data
...	
(Pad encrypted area to even multiple of 8 bytes)	
[END ENCRYPTED AREA]	
2 bytes	CRC

File Initial Download

File Initial Download packets have the following data structure:

Field Size:	Description:
1 byte	Packet Type = 0x83
1 byte	Packet Subtype = 0x02
2 bytes	Packet Size
[BEGIN ENCRYPTED AREA]	
4 bytes	File ID being downloaded (LBS first)
4 bytes	Total file size (LSB first)
4 bytes	File flags (compression info, permissions, etc. - TBD)
2 bytes	Number of segments (LSB first)
1 byte	Path length
Variable	pathname on local machine
(Pad encrypted area to even multiple of 8-bytes)	
[END ENCRYPTED AREA]	
2 bytes	CRC

File Next Download

File Next Download packets have the following data structure:

Field Size:	Description:
1 byte	Packet Type = 0x83
1 byte	Packet Subtype = 0x03
2 bytes	Packet Size

[BEGIN ENCRYPTED AREA]
4 bytes File ID being downloaded (LBS first)
2 bytes Segment number (LSB first)
2 bytes Segment data size (LSB first)
Variable Segment data
(Pad encrypted area to even multiple of 8-bytes)
[END ENCRYPTED AREA]
2 bytes CRC

File Initial Upload

File Initial Upload packets have the following data structure:

Field Size: Description:
1 byte Packet Type = 0x83
1 byte Packet Subtype = 0x04
2 bytes Packet Size
[BEGIN ENCRYPTED AREA]
4 bytes File ID being uploaded (LBS first)
4 bytes Total file size (LSB first)
4 bytes File flags (compression info, permissions, etc. - TBD)
2 bytes Number of Segments (LSB first)
1 byte Filename length
Variable Filename
(Pad encrypted area to even multiple of 8-bytes)
[END ENCRYPTED AREA]
2 bytes CRC

Retrieve File

A request to transfer a file to a client if the client's version of the file is missing or out of date. Retrieve file request packets have the following data structure:

Field Size: Description:
1 byte Packet Type = 0x81
1 byte Packet Subtype = 0x1F
2 bytes Packet Size = 22
[BEGIN ENCRYPTED AREA]
1 byte File Type
0 = Content
1 = Service file
4 bytes File ID
4 bytes Current file size
4 bytes Current file modification date
2 bytes Current file CRC
(Pad encrypted area to even 8-byte boundary with zeros)
[END ENCRYPTED AREA]
2 bytes CRC

Retrieve File Response

This packet is sent to the client immediately if the requested file is up to date, or does not exist, or after a series of file download packets if the file needs to be downloaded.

Retrieve file request packets have the following data structure:

Field Size:	**Description:**
1 byte	Packet Type = 0x81
1 byte	Packet Subtype = 0x20
2 bytes	Packet Size = 22
[BEGIN ENCRYPTED AREA]	
1 byte	Status 0 = File downloaded successfully 1 = Current file is up to date 2 = Error downloading 3 = File not found 4 = System error
4 bytes	File ID
4 bytes	Current file size
4 bytes	Current file modification date
2 bytes	Current file CRC
(Pad encrypted area to even 8-byte boundary with zeros)	
[END ENCRYPTED AREA]	
2 bytes	CRC

For the synchronization function, assuming that the inventory of a subscriber is being downloaded, e.g. from a database associated with a regional server to a database associated with an arcade, public PC or validation and redemption terminal, the packets can add a field (e.g. 4 bytes) which identifies the subscriber.

The administration terminal 43 contains a database which specifies the entire system, in subdatabases which can be specified as classes. The content of the complete database, or the content of each subdatabase can be specified by a single administration entity, or any can be specified by authorized suppliers. In the latter case, the content of the subdatabases can be filled by communication between the terminal 43 and suppliers' terminals, using the system shown in Figure 1.

Subdatabases are preferred to relate to the following:

Suppliers	Locations
Game Machines	Game Software
Redemptions	Tournaments
Merchandise Categories	Pricing
Prizes	Alarms
Schedules	Manufacturers
Subscribers	Technicians
Advertising	Content
Coupons	Loyalty Programs
Promotions	Services

Profile Descriptor (e.g. VALs)

VAL^{tm} is a standard profile descriptor which has been adopted by some companies. VALs or class systems used by other companies can be stored and used in addition to or as a replacement for the demographic classification described herein.

Game Software is an example of the above. A field of the above can be the identification of a game which is located on a CD ROM, hard disk drive, DVD or mass semiconductor or other storage means at a game location. Another field can be an algorithm which controls the parameters of the game. Another field can store score brackets which a player must reach in order to win a prize. Another field can store timing information which can be used to modify the brackets. Other fields can be filled with other data required for the game.

The other subdatabases can be similarly filled with data to specify the operation of each parameter of the system. For example, a merchant can specify a premium related to the merchant's store as a prize to the player of a game at an arcade nearby to the store. A field in the prize or coupon subdatabase can point to the game or games for which the premium or coupon is to be

distributed, another can specify a score bracket to be achieved (which can be >0) by the player in order to win the premium or coupon, etc.

Once the database has been completed to a required level, the subdatabases are downloaded to the decision support server 7, which stores it in its database 9. The decision support server then downloads the data as related to the various peripheral terminals to the associated regional servers, which in turn store required data in their respective databases 5A to 5N, and download the data related to the respective terminals to those that are appropriate.

For example, regional server 5A downloads initialization parameters to the master games 21 in the arcades in which authorized game machines are located which can communicate with the regional server 5A. It also downloads initialization parameters to the software at the public PCs with which it can communicate, which have been authorized at the administration location.

As a further example, the initialization parameters may initialize or authorize operation of particular video games, with particular score brackets, at the arcade 17 and/or at the public PC. The initialization parameters may also initialize a program at the public PC which controls acceptance of payments, and/or acceptance of orders for merchandise, and/or redemption of premiums, etc., and also controls transmission of data to the regional server which updates the account of the customer in currency or other media of exchange such as loyalty points, etc.

Table 1 which is attached at the end of this specification describes preferred subdatabases to be established initially at the administration terminal, which specify games, software, advertisements and other matters, and their parameters, which are downloaded to

the terminals in a manner as described above. Each of the subdatabases is headed by a table name, and each of the fields describes the content of the field; its content and use are self evident from the name chosen.

It was noted above that parameters can be downloaded for the operation of a game. The shell of a game can have a requirement for score formulae to be inserted. The score formulae can be determined at the administration terminal, and downloaded as noted earlier, as one or more parameters of the game.

For example, consider the Pacman™ game. Key graphical elements of the game are dots, fruits, ghosts, and the game requires a scope. These elements can be used in formulae; for example the dots can be given a statistic S00, the fruits a statistic S01, the ghosts a statistic S02 and the scope a statistic S03.

A formula can be determined, e.g. (S00 + 5) * S03 to determine an output score for dots, for example. The formulae can be modified by a player rating, the player having been identified by his ID card that has been swiped. The formulae can be modified by the time of day, the number of games played in a certain time interval, the score brackets achieved by players in a certain time interval, etc.

Indeed, a game can be refreshed by formulae which change the object of a game. An easy game can be made more difficult or different based on the formulae for a particular player profile.

Loyalty points, coupons or other prizes can be awarded based on different formulae. These can be specified by different suppliers' terminals interacting with the administration terminal, or solely at the administration terminal.

Prizes can be awarded based on a history of plays at a particular location. Par level and score brackets

can be automatically adjusted. With reference to Figure 3, a histogram is shown of scores of a game against the number of plays achieving the scores. Within the region A, the top 10% of scores occur. Within the region B, the next 20% of scores occur, and within the region C, the next 30% of scores occur. A supplier determines, through the administration terminal, that the best prizes should be awarded for the scores in region A, the next best prizes for the scores in region B, and the lowest prize for the scores in region C.

The software can store the scores, and supply the scores to the game shell software to adjust the regions A, B and C, depending on how well and how many players play, and the history of prize redemptions at the particular game location, as specified by parameters input at the administration terminal. This can consist of adding the scores together, and if there have been prize redemptions in excess of a predetermined number established at the administration terminal, skewing the scores, or multiplying the scores, by a number or game handicap value. This process of skewing, in effect varies the shape and placement of the curve shown in Figure 3, and provides an automatic par or bracket adjustment for the game.

The software can also keep track of a player's score on a particular game and store it in the player's database, and can forbid the awarding of a prize to the player for a particular game within a certain time interval or within a certain arcade. This will stop a good player from collecting too many prizes or too large a prize on a single machine if the number of players is low, or if the player monopolizes a game.

It should be noted that while the description herein is to a client-server type system which communicate in a particular manner, the equivalent

function and structure of the invention could also be realized by persons skilled in the art understanding this invention via one or more browsers which interface one or more web pages, either via the internet or on one or more intranets which are either self-contained or which communicate via the internet, or via private network.

A person understanding this invention may now conceive of alternate embodiments and enhancements using the principles described herein. All such embodiments and enhancements are considered to be within the spirit and scope of this invention as defined in the claims appended hereto.

TABLE 1

```
# initdb.ini
#
# NOTES:
# 1.  Database name cannot exceed 23 characters
# 2.  Allowed data type are LONG, SHORT, BIN, VARBIN
# 3.  Table names cannot exceed 23 characters
# 4.  Field names cannot exceed 23 characters
# 5.  Arrays of SHORT and LONG are not supported (set
      size = 1)
# 6.  Variable binary fields as primary keys is not
      supported
# 7.  Each table can have only one variable binary
      field
# 8.  Variable binary field must be last field in
      table
# 9.  Variable binary field must be preceded by SHORT
      size field
# 10. File created will be database name with ".db"
      appended
# 11. Tables cannot exceed 32 fields

DATABASE = nani

TABLE    = AD
   FIELD = RECORD_ID                 : BIN     : 6 : PK
   FIELD = AD_ID                     : LONG    : 1
   FIELD = CONTENT_ID                : LONG    : 1
   FIELD = PRECEDING_AD_ID           : LONG    : 1
   FIELD = NEXT_AD_ID                : LONG    : 1
   FIELD = MAX_VIEWS_PER_PERSON      : SHORT   : 1
   FIELD = FLAGS                     : BIN     : 1

TABLE    = AD_SCHEDULE
   FIELD = RECORD_ID                 : BIN     : 6 : PK
   FIELD = AD_ID                     : LONG    : 1
   FIELD = TERMINAL_ID               : BIN     : 6
   FIELD = SCHEDULE_ID               : LONG    : 1
   FIELD = FLAGS                     : BIN     : 1

TABLE    = AD_TARGET
   FIELD = RECORD_ID                 : BIN     : 6 : PK
   FIELD = TARGET_ID                 : LONG    : 1
   FIELD = AD_ID                     : LONG    : 1
   FIELD = TARGET_TYPE               : BIN     : 1
   FIELD = TARGET_EVENT_ID           : LONG    : 1
   FIELD = TARGET_SERVICE_ID         : LONG    : 1
   FIELD = SLOT                      : BIN     : 1
   FIELD = PRIORITY                  : BIN     : 1
   FIELD = MIN_DAILY_EXPOSURES       : SHORT   : 1
```

```
   FIELD = MAX_DAILY_EXPOSURES      : SHORT    : 1
   FIELD = MIN_TOTAL_EXPOSURES      : LONG     : 1
   FIELD = MAX_TOTAL_EXPOSURES      : LONG     : 1
   FIELD = FLAGS                    : BIN      : 1

TABLE    = AD_TARGET_DEMOGRAPHIC
   FIELD = RECORD_ID                : BIN      : 6 : PK
   FIELD = TARGET_ID                : LONG     : 1
   FIELD = DEMOGRAPHIC              : LONG     : 1
   FIELD = FLAGS                    : BIN      : 1

TABLE    = AD_TARGET_PROMOTION
   FIELD = RECORD_ID                : BIN      : 6 :PK
   FIELD = TARGET_ID                : LONG     : 1
   FIELD = PROMOTION_ID             : LONG     : 1
   FIELD = FLAGS                    : BIN      : 1

TABLE    = AD_URC
   FIELD = RECORD_ID                : BIN      : 6 : PK
   FIELD = AD_ID                    : LONG     : 1
   FIELD = URC                      : LONG     : 1
   FIELD = FLAGS                    : BIN      : 1

TABLE    = ALARM_HANDLER
   FIELD = RECORD_ID                : BIN      : 6 : PK
   FIELD = HANDLER_ID               : LONG     : 1
   FIELD = ALARM_CODE               : BIN      : 1
   FIELD = PRIORITY                 : BIN      : 1
   FIELD = PROCESS_TYPE             : BIN      : 1
   FIELD = FLAGS                    : BIN      : 1
   FIELD = PROCESS_DATA_SIZE        : SHORT    : 1
   FIELD = PROCESS_DATA             : VARBIN   : 1

TABLE    = BRACKET
   FIELD = RECORD_ID                : BIN      : 6 : PK
   FIELD = TOURNAMENT_ID            : LONG     : 1
   FIELD = BRACKET_ID               : BIN      : 1
   FIELD = SHORT_NAME               : BIN      : 28
   FIELD = NAME                     : BIN      : 72
   FIELD = START_DATE_TIME          : LONG     : 1
   FIELD = END_DATE_TIME            : LONG     : 1
   FIELD = SCORE_POSTING_TIME       : LONG     : 1
   FIELD = ENTRY_PRICE              : LONG     : 1
   FIELD = PREPAID_PLAYS            : SHORT    : 1
   FIELD = MIN_GAMES_PER_PLAYER     : SHORT    : 1
   FIELD = MAX_GAMES_PER_PLAYER     : SHORT    : 1
   FIELD = MIN_GAMES_PER_TEAM       : SHORT    : 1
   FIELD = MAX_GAMES_PER_TEAM       : SHORT    : 1
   FIELD = LEADERBOARD_ID           : LONG     : 1
   FIELD = SPONSER                  : BIN      : 40
   FIELD = ICON                     : LONG     : 1
   FIELD = SPLASH_SCREEN            : LONG     : 1
```

```
    FIELD = FLAGS                          : BIN     : 1
    FIELD = RANKING_ALGORITHM              : BIN     : 1

TABLE     = BRACKET_ADVANCE
    FIELD = RECORD_ID                      : BIN     : 6 : PK
    FIELD = TOURNAMENT_ID                  : LONG    : 1
    FIELD = BRACKET_ID                     : BIN     : 1
    FIELD = ADVANCE_TYPE                   : BIN     : 1
    FIELD = FROM_TOURNAMENT_ID             : LONG    : 1
    FIELD = FROM_BRACKET_ID                : BIN     : 1
    FIELD = FROM_LOW                       : LONG    : 1
    FIELD = TO_HIGH                        : LONG    : 1
    FIELD = SERVICE_ID                     : LONG    : 1
    FIELD = PROFILE                        : BIN     : 1
    FIELD = FLAGS                          : BIN     : 1

TABLE     = BRACKET_MEMBERSHIP
    FIELD = RECORD_ID                      : BIN     : 6 : PK
    FIELD = TOURNAMENT_ID                  : LONG    : 1
    FIELD = BRACKET_ID                     : BIN     : 1
    FIELD = SUBSCRIBER_ID                  : LONG    : 1
    FIELD = FLAGS                          : BIN     : 1

TABLE     = BRACKET_PRIZE
    FIELD = RECORD_ID                      : BIN     : 6 : PK
    FIELD = TOURNAMENT_ID                  : LONG    : 1
    FIELD = BRACKET_ID                     : BIN     : 1
    FIELD = PRIZE_ITEM_ID                  : LONG    : 1
    FIELD = PRIZE_PERCENT_OF_POOL          : BIN     : 1
    FIELD = WINNING_PLACE                  : BIN     : 1
    FIELD = PLACE_NAME                     : BIN     : 20
    FIELD = NUM_WINNERS                    : LONG    : 1
    FIELD = EXPIRATION_DATE                : LONG    : 1
    FIELD = FLAGS                          : BIN     : 1

TABLE     = BRACKET_PROMOTION
    FIELD = RECORD_ID                      : BIN     : 6 : PK
    FIELD = TOURNAMENT_ID                  : LONG    : 1
    FIELD = BRACKET_ID                     : BIN     : 1
    FIELD = PROMOTION_ID                   : LONG    : 1
    FIELD = FLAGS                          : BIN     : 1
    FIELD = MIN_RANK                       : SHORT   : 1

TABLE     = BRACKET_RULE_SCREEN
    FIELD = RECORD_ID                      : BIN     : 6 : PK
    FIELD = TOURNAMENT_ID                  : LONG    : 1
    FIELD = BRACKET_ID                     : BIN     : 1
    FIELD = SERVICE_ID                     : LONG    : 1
    FIELD = SCREEN_INDEX                   : BIN     : 1
    FIELD = CONTENT_ID                     : LONG    : 1
    FIELD = FLAGS                          : BIN     : 1
```

```
TABLE    = BRACKET_SCHEDULE
   FIELD = RECORD_ID                  : BIN     : 6 : PK
   FIELD = TOURNAMENT_ID              : LONG    : 1
   FIELD = BRACKET_ID                 : BIN     : 1
   FIELD = TERMINAL_ID                : BIN     : 6
   FIELD = SCHEDULE_ID                : LONG    : 1
   FIELD = FLAGS                      : BIN     : 1
   FIELD = NUM_LOCAL_LEADERS          : SHORT   : 1

TABLE    = BRACKET_SERVICE
   FIELD = RECORD_ID                  : BIN     : 6 : PK
   FIELD = TOURNAMENT_ID              : LONG    : 1
   FIELD = BRACKET_ID                 : BIN     : 1
   FIELD = SERVICE_ID                 : LONG    : 1
   FIELD = PROFILE                    : BIN     : 1
   FIELD = PRICING_ID                 : LONG    : 1
   FIELD = FLAGS                      : BIN     : 1
   FIELD = MIN_RATING_ALLOWED         : BIN     : 1
   FIELD = MAX_RATING_ALLOWED         : BIN     : 1

TABLE    = CATALOG_CATEGORY
   FIELD = RECORD_ID                  : BIN     : 6 : PK
   FIELD = CATEGORY_ID                : LONG    : 1
   FIELD = CATEGORY_NAME              : BIN     : 40
   FIELD = PARENT_CATEGORY_ID         : LONG    : 1
   FIELD = ICON                       : LONG    : 1
   FIELD = FLAGS                      : BIN     : 1

TABLE    = CATALOG_CATEGORY_URC
   FIELD = RECORD_ID                  : BIN     : 6 : PK
   FIELD = CATEGORY_ID                : LONG    : 1
   FIELD = URC                        : LONG    : 1
   FIELD = FLAGS                      : BIN     : 1

TABLE    = CONTENT
   FIELD = RECORD_ID                  : BIN     : 6 : PK
   FIELD = CONTENT_ID                 : LONG    : 1
   FIELD = FORMAT                     : BIN     : 1
   FIELD = DURATION_MS                : LONG    : 1
   FIELD = PATHNAME                   : BIN     : 60
   FIELD = FILE_SIZE                  : LONG    : 1
   FIELD = CRC                        : SHORT   : 1
   FIELD = FILE_TIMESTAMP             : LONG    : 1
   FIELD = FLAGS                      : BIN     : 1
TABLE    = COUPON
   FIELD = RECORD_ID                  : BIN     : 6
   FIELD = COUPON-ID                  : LONG    : 1
   FIELD = DESCRIPTION                : BIN     : 40
   FIELD = CONTENT_ID                 : LONG    : 1
   FIELD = UPC_SYMBOL                 : BIN     : 12
   FIELD = FACE_VALUE                 : LONG    : 1
   FIELD = MAX_ISSUED_PER_PLAYER      : SHORT   : 1
```

```
   FIELD = FLAGS                          : BIN      : 1

TABLE    = COUPON_ITEM_SCHEDULE
   FIELD = RECORD_ID                      : BIN      : 6 : PK
   FIELD = COUPON_ID                      : LONG     : 1
   FIELD = ITEM_ID                        : LONG     : 1
   FIELD = TERMINAL_ID                    : BIN      : 6
   FIELD = SCHEDULE_ID                    : LONG     : 1
   FIELD = COUPON_CASH_VALUE              : LONG     : 1
   FIELD = COUPON_PRICE                   : LONG     : 1
   FIELD = NUM_ITEMS_PER_COUPON           : SHORT    : 1
   FIELD = MAX_REDEEMED                   : SHORT    : 1
   FIELD = FLAGS                          : BIN      : 1

TABLE    = COUPON_SERVICE_SCHEDULE
   FIELD = RECORD_ID                      : BIN      : 6 : PK
   FIELD = COUPON_ID                      : LONG     : 1
   FIELD = SERVICE_ID                     : LONG     : 1
   FIELD = TERMINAL_ID                    : BIN      : 6
   FIELD = SCHEDULE_ID                    : LONG     : 1
   FIELD = COUPON_CASH_VALUE              : LONG     : 1
   FIELD = COUPON_PRICE                   : LONG     : 1
   FIELD = NUM_PLAYS_PER_COUPON           : SHORT    : 1
   FIELD = MAX_REDEEMED                   : SHORT    : 1
   FIELD = FLAGS                          : BIN      : 1

TABLE    = FILE_INFO
   FIELD = RECORD_ID                      : BIN      : 6 : PK
   FIELD = FILE_ID                        : LONG     : 1
   FIELD = FILESET_ID                     : LONG     : 1
   FIELD = PATHNAME                       : BIN      : 60
   FIELD = FILE_SIZE                      : LONG     : 1
   FIELD = CRC                            : SHORT    : 1
   FIELD = FILE_TIMESTAMP                 : LONG     : 1
   FIELD = FLAGS                          : BIN      : 1

TABLE    = ITEM
   FIELD = RECORD_ID                      : BIN      : 6 : PK
   FIELD = ITEM_ID                        : LONG     : 1
   FIELD = CATEGORY_ID                    : LONG     : 1
   FIELD = ITEM_NAME                      : BIN      : 40
   FIELD = MIN_PRICE                      : LONG     : 1
   FIELD = MAX_PRICE                      : LONG     : 1
   FIELD = ICON                           : LONG     : 1
   FIELD = FLAGS                          : BIN      : 1
   FIELD = ITEM_COST                      : LONG     : 1
   FIELD = RETAIL_PRICE                   : LONG     : 1
   FIELD = QUANTITY_ON_HAND               : LONG     : 1
   FIELD = MIN_QUANTITY_ON_HAND           : LONG     : 1
   FIELD = DISTRIBUTION_LOCATION          : BIN      : 40
```

```
TABLE    = ITEM_ATTRIBUTE
   FIELD = RECORD_ID                  : BIN     : 6   : PK
   FIELD = ITEM_ID                    : LONG    : 1
   FIELD = ATTRIBUTE_ID               : BIN     : 1
   FIELD = ATTRIBUTE_NAME             : BIN     : 40
   FIELD = DATA_TYPE                  : BIN     : 1
   FIELD = MINIMUM                    : LONG    : 1
   FIELD = MAXIMUM                    : LONG    : 1
   FIELD = FLAGS                      : BIN     : 1

TABLE    = ITEM_ATTRIBUTE_VALUE
   FIELD = RECORD_ID                  : BIN     : 6 : PK
   FIELD = ITEM_ID                    : LONG    : 1
   FIELD = ATTRIBUTE_ID               : BIN     : 1
   FIELD = VALUE_INDEX                : BIN     : 1
   FIELD = VALUE_TEXT                 : BIN     : 30
   FIELD = FLAGS                      : BIN     : 1

TABLE    = ITEM_PROMOTION
   FIELD = RECORD_ID                  : BIN     : 6 : PK
   FIELD = ITEM_ID                    : LONG    : 1
   FIELD = PROMOTION_ID               : LONG    : 1
   FIELD = FLAGS                      : BIN     : 1

TABLE    = ITEM_SCHEDULE
   FIELD = RECORD_ID                  : BIN     : 6 : PK
   FIELD = ITEM_ID                    : LONG    : 1
   FIELD = TERMINAL_ID                : BIN     : 6
   FIELD = SCHEDULE_ID                : LONG    : 1
   FIELD = FLAGS                      : BIN     : 1

TABLE    = ITEM_SCREEN
   FIELD = RECORD_ID                  : BIN     : 6 : PK
   FIELD = ITEM_ID                    : LONG    : 1
   FIELD = SCREEN_INDEX               : BIN     : 1
   FIELD = CONTENT_ID                 : LONG    : 1
   FIELD = FLAGS                      : BIN     : 1

TABLE    = ITEM_URC
   FIELD = RECORD_ID                  : BIN     : 6 : PK
   FIELD = ITEM_ID                    : LONG    : 1
   FIELD = URC                        : LONG    : 1
   FIELD = FLAGS                      : BIN     : 1

TABLE    = LEADERBOARD
   FIELD = RECORD_ID                  : BIN     : 6 : PK
   FIELD = LEADERBOARD_ID             : LONG    : 1
   FIELD = LEADERBOARD_DATE_TIME      : LONG    : 1
   FIELD = FLAGS                      : BIN     : 1
   FIELD = MAX_LEADERS                : SHORT   : 1
```

```
TABLE     = LEADERBOARD_LEADER
   FIELD  = RECORD_ID                  : BIN     : 6 : PK
   FIELD  = LEADERBOARD_ID             : LONG    : 1
   FIELD  = SUBSCRIBER_ID              : LONG    : 1
   FIELD  = ALIAS                      : BIN     : 26
   FIELD  = LOCATION_NAME              : BIN     : 26
   FIELD  = LOCATION_CITY_STATE        : BIN     : 26
   FIELD  = PRIZE_NAME                 : BIN     : 26
   FIELD  = SCORE                      : LONG    : 1
   FIELD  = SCORE_DATE_TIME            : LONG    : 1
   FIELD  = FLAGS                      : BIN     : 1

TABLE     = LEADERBOARD_RANKING
   FIELD  = RECORD_ID                  : BIN     : 6 : PK
   FIELD  = LEADERBOARD_ID             : LONG    : 1
   FIELD  = RANK                       : SHORT   : 1
   FIELD  = SUBSCRIBER_ID              : LONG    : 1
   FIELD  = FLAGS                      : BIN     : 1

TABLE     = LOCATION
   FIELD  = RECORD_ID                  : BIN     : 6 : PK
   FIELD  = LOCATION_ID                : LONG    : 1
   FIELD  = SHORT_NAME                 : BIN     : 26
   FIELD  = NAME                       : BIN     : 72
   FIELD  = SHORT_CITY_STATE           : BIN     : 26
   FIELD  = CITY_STATE                 : BIN     : 72
   FIELD  = TIME_ZONE                  : BIN     : 1
   FIELD  = MAX_DAILY_PAYOUT           : LONG    : 1
   FIELD  = DIALIN_INTERVAL            : LONG    : 1
   FIELD  = LANGUAGE_CODE              : SHORT   : 1
   FIELD  = COUNTRY_CODE               : SHORT   : 1
   FIELD  = FLAGS                      : BIN     : 1
   FIELD  = TOKEN_PRICE                : LONG    : 1

TABLE     = LOCATION_ATTRACT_SCREEN
   FIELD  = RECORD_ID                  : BIN     : 6 : PK
   FIELD  = LOCATION_ID                : LONG    : 1
   FIELD  = SCREEN_INDEX               : BIN     : 1
   FIELD  = CONTENT_ID                 : LONG    : 1
   FIELD  = FLAGS                      : BIN     : 1

TABLE     = LOCATION_COUPON_SCHED
   FIELD  = RECORD_ID                  : BIN     : 6 : PK
   FIELD  = LOCATION_ID                : LONG    : 1
   FIELD  = COUPON_ID                  : LONG    : 1
   FIELD  = SCHEDULE_ID                : LONG    : 1
   FIELD  = COUPON_PRICE               : LONG    : 1
   FIELD  = FLAGS                      : BIN     : 1

TABLE     = LOCATION_LOYALTY_SCHED
   FIELD  = RECORD_ID                  : BIN     : 6 : PK
   FIELD  = LOCATION_ID                : LONG    : 1
```

```
   FIELD = LOYALTY_PROGRAM_ID          : LONG     : 1
   FIELD = SCHEDULE_ID                 : LONG     : 1
   FIELD = POINT_PRICE                 : LONG     : 1
   FIELD = FLAGS                       : BIN      : 1

TABLE    = LOCATION_URC
   FIELD = RECORD_ID                   : BIN      : 6 : PK
   FIELD = LOCATION_ID                 : LONG     : 1
   FIELD = URC                         : LONG     : 1
   FIELD = FLAGS                       : BIN      : 1

TABLE    = LOYALTY_PROGRAM
   FIELD = RECORD_ID                   : BIN      : 6
   FIELD = LOYALTY_PROGRAM_ID          : LONG     : 1
   FIELD = NAME                        : BIN      : 40
   FIELD = POINT_LABEL                 : BIN      : 20
   FIELD = FLAGS                       : BIN      : 1

TABLE    = LOYALTY_ITEM_SCHED
   FIELD = RECORD_ID                   : BIN      : 6 : PK
   FIELD = LOYALTY_PROGRAM_ID          : LONG     : 1
   FIELD = ITEM_ID                     : LONG     : 1
   FIELD = TERMINAL_ID                 : BIN      : 6
   FIELD = SCHEDULE_ID                 : LONG     : 1
   FIELD = POINT_CASH_VALUE            : LONG     : 1
   FIELD = POINT_PRICE                 : LONG     : 1
   FIELD = POINT_PER_ITEM              : SHORT    : 1
   FIELD = ITEMS_PER_POINT             : SHORT    : 1
   FIELD = MAX_USED_PER_ITEM           : SHORT    : 1
   FIELD = FLAGS                       : BIN      : 1

TABLE    = LOYALTY_SERVICE_SCHED
   FIELD = RECORD_ID                   : BIN      : 6 : PK
   FIELD = LOYALTY_PROGRAM_ID          : LONG     : 1
   FIELD = SERVICE_ID                  : LONG     : 1
   FIELD = TERMINAL_ID                 : BIN      : 6
   FIELD = SCHEDULE_ID                 : LONG     : 1
   FIELD = POINT_CASH_VALUE            : LONG     : 1
   FIELD = POINT_PRICE                 : LONG     : 1
   FIELD = POINTS_PER_PLAY             : SHORT    : 1
   FIELD = PLAYS_PER_POINT             : SHORT    : 1
   FIELD = MAX_USED_PER_PLAY           : SHORT    : 1
   FIELD = FLAGS                       : BIN      : 1

TABLE    = PRICING
   FIELD = RECORD_ID                   : BIN      : 6 : PK
   FIELD = PRICING_ID                  : LONG     : 1
   FIELD = PRICE_TO_START              : LONG     : 1
   FIELD = PRICE_TO_CONTINUE           : LONG     : 1
   FIELD = START_DURATION              : LONG     : 1
   FIELD = CONTINUE_DURATION           : LONG     : 1
   FIELD = FLAGS                       : BIN      : 1
```

```
TABLE     = PROMOTION
   FIELD  = RECORD_ID                    : BIN     : 6 : PK
   FIELD  = PROMOTION_ID                 : LONG    : 1
   FIELD  = FLAGS                        : BIN     : 1

TABLE     = PROMOTION_COUPON
   FIELD  = RECORD_ID                    : BIN     : 6 : PK
   FIELD  = PROMOTION_ID                 : LONG    : 1
   FIELD  = COUPON_ID_TO_AWARD           : LONG    : 1
   FIELD  = FLAGS                        : BIN     : 1

TABLE     = PROMOTION_LOYALTY
   FIELD  = RECORD_ID                    : BIN     : 6 : PK
   FIELD  = PROMOTION_ID                 : LONG    : 1
   FIELD  = LOYALTY_PROGRAM_ID           : LONG    : 1
   FIELD  = NUM_POINTS_TO_AWARD          : SHORT   : 1
   FIELD  = FLAGS                        : BIN     : 1

TABLE     = REDEMPTION
   FIELD  = RECORD_ID                    : BIN     : 6 : PK
   FIELD  = REDEMPTION_ID                : LONG    : 1
   FIELD  = FLAGS                        : BIN     : 1
   FIELD  = MIN_RATING_ALLOWED           : BIN     : 1
   FIELD  = MAX_RATING_ALLOWED           : BIN     : 1
   FIELD  = SERVICE_ID                   : LONG    : 1
   FIELD  = PROFILE                      : BIN     : 1
   FIELD  = SHORT_NAME                   : BIN     : 28
   FIELD  = NAME                         : BIN     : 72
   FIELD  = PRICING_ID                   : LONG    : 1
   FIELD  = START_DATE_TIME              : LONG    : 1
   FIELD  = END_DATE_TIME                : LONG    : 1
   FIELD  = SPONSER                      : BIN     : 40
   FIELD  = ICON                         : LONG    : 1
   FIELD  = SPLASH_SCREEN                : LONG    : 1
   FIELD  = PERCENT_MONEY_TO_POOL        : BIN     : 1
   FIELD  = CURRENT_POOL_VALUE           : LONG    : 1
   FIELD  = VALUE_OF_AVAIL_PRIZES        : LONG    : 1
   FIELD  = PLAYS_TO_DATE                : LONG    : 1
   FIELD  = LAST_UPDATE_DATE_TIME        : LONG    : 1

TABLE     = REDEMPTION_PAR_LEVEL
   FIELD  = RECORD_ID                    : BIN     : 6 : PK
   FIELD  = REDEMPTION_ID                : LONG    : 1
   FIELD  = PAR_LEVEL                    : BIN     : 1
   FIELD  = PAR_SCORE                    : LONG    : 1
   FIELD  = TARGET_PAY_PERCENT           : BIN     : 1
   FIELD  = PRIZE_ITEM_ID                : LONG    : 1
   FIELD  = PERCENT_OF_POOL_APPLIED      : BIN     : 1
   FIELD  = EXPIRATION_DATE              : LONG    : 1
   FIELD  = NUM_REMAINING                : LONG    : 1
   FIELD  = MIN_WIN_INTERVAL             : LONG    : 1
   FIELD  = FLAGS                        : BIN     : 1
```

```
   FIELD = MIN_PRIOR_PLAYS          : LONG    : 1

TABLE    = REDEMPTION_PROMOTION
   FIELD = RECORD_ID                : BIN     : 6 : PK
   FIELD = REDEMPTION_ID            : LONG    : 1
   FIELD = PROMOTION_ID             : LONG    : 1
   FIELD = FLAGS                    : BIN     : 1
   FIELD = PAR_LEVEL                : BIN     : 1

TABLE    = REDEMPTION_RULE_SCREEN
   FIELD = RECORD_ID                : BIN     : 6 : PK
   FIELD = REDEMPTION_ID            : LONG    : 1
   FIELD = SCREEN_INDEX             : BIN     : 1
   FIELD = CONTENT_ID               : LONG    : 1
   FIELD = FLAGS                    : BIN     : 1

TABLE    = REDEMPTION_SCHEDULE
   FIELD = RECORD_ID                : BIN     : 6 : PK
   FIELD = REDEMPTION_ID            : LONG    : 1
   FIELD = TERMINAL_ID              : BIN     : 6
   FIELD = SCHEDULE_ID              : LONG    : 1
   FIELD = FLAGS                    : BIN     : 1

TABLE    = REDEMPTION_URC
   FIELD = RECORD_ID                : BIN     : 6 : PK
   FIELD = REDEMPTION_ID            : LONG    : 1
   FIELD = URC                      : LONG    : 1
   FIELD = FLAGS                    : BIN     : 1

TABLE    = SCHEDULE
   FIELD = RECORD_ID                : BIN     : 6 : PK
   FIELD = SCHEDULE_ID              : LONG    : 1
   FIELD = START_DATE_TIME          : LONG    : 1
   FIELD = END_DATE_TIME            : LONG    : 1
   FIELD = WEEKDAYS                 : BIN     : 1
   FIELD = START_TIME_OF_DAY        : LONG    : 1
   FIELD = END_TIME_OF_DAY          : LONG    : 1
   FIELD = FLAGS                    : BIN     : 1

TABLE    = SERVICE
   FIELD = RECORD_ID                : BIN     : 6 : PK
   FIELD = SERVICE_ID               : LONG    : 1
   FIELD = SERVICE_TYPE             : BIN     : 1
   FIELD = FLAGS                    : BIN     : 1
   FIELD = SHORT_NAME               : BIN     : 30
   FIELD = NAME                     : BIN     : 72
   FIELD = ICON                     : LONG    : 1
   FIELD = ATTRACT_SCREEN           : LONG    : 1
   FIELD = SW_CAPABILITIES          : BIN     : 10
   FIELD = HW_REQUIREMENTS          : BIN     : 10
   FIELD = FILESET_ID               : LONG    : 1
   FIELD = EXECUTABLE_FILE_ID       : LONG    : 1
```

```
TABLE    = SERVICE_PROFILE
   FIELD = RECORD_ID                  : BIN     : 6 : PK
   FIELD = SERVICE_ID                 : LONG    : 1
   FIELD = PROFILE                    : BIN     : 1
   FIELD = PROFILE_NAME               : BIN     : 40
   FIELD = FLAGS                      : BIN     : 1
   FIELD = SCORE_FORMULA_LENGTH       : SHORT   : 1
   FIELD = SCORE_FORMULA              : VARBIN  : 1

TABLE    = SERVICE_PROFILE_SETTING
   FIELD = RECORD_ID                  : BIN     : 6 : PK
   FIELD = SERVICE_ID                 : LONG    : 1
   FIELD = PROFILE                    : BIN     : 1
   FIELD = SETTING_ID                 : LONG    : 1
   FIELD = SETTING_VALUE              : LONG    : 1
   FIELD = FLAGS                      : BIN     : 1

TABLE    = SERVICE_PROMOTION
   FIELD = RECORD_ID                  : BIN     : 6 : PK
   FIELD = SERVICE_ID                 : LONG    : 1
   FIELD = PROMOTION_ID               : LONG    : 1
   FIELD = FLAGS                      : BIN     : 1

TABLE    = SERVICE_RATING
   FIELD = RECORD_ID                  : BIN     : 6 : PK
   FIELD = SERVICE_ID                 : LONG    : 1
   FIELD = RATING                     : BIN     : 1
   FIELD = DESCRIPTION                : BIN     : 26
   FIELD = FLAGS                      : BIN     : 1


TABLE    = SERVICE_SCHEDULE
   FIELD = RECORD_ID                  : BIN     : 6 : PK
   FIELD = SERVICE_ID                 : LONG    : 1
   FIELD = TERMINAL_ID                : BIN     : 6
   FIELD = SCHEDULE_ID                : LONG    : 1
   FIELD = PROFILE                    : BIN     : 1
   FIELD = PRICING_ID                 : LONG    : 1
   FIELD = FLAGS                      : BIN     : 1

TABLE    = SERVICE_SETTING
   FIELD = RECORD_ID                  : BIN     : 6 : PK
   FIELD = SERVICE_ID                 : LONG    : 1
   FIELD = SETTING_ID                 : LONG    : 1
   FIELD = SETTING_NAME               : BIN     : 32
   FIELD = TYPE                       : BIN     : 1
   FIELD = FLAGS                      : BIN     : 1

TABLE    = SERVICE_SLOT
   FIELD = RECORD_ID                  : BIN     : 6 : PK
   FIELD = SERVICE_ID                 : LONG    : 1
   FIELD = SLOT                       : BIN     : 1
```

```
   FIELD = SCHEDULE_ID                : LONG    : 1
   FIELD = NUM_AD_PLAYS               : BIN     : 1
   FIELD = FLAGS                      : BIN     : 1

TABLE    = SERVICE_STATISTIC
   FIELD = RECORD_ID                  : BIN     : 6 : PK
   FIELD = SERVICE_ID                 : LONG    : 1
   FIELD = STATISTIC_ID               : LONG    : 1
   FIELD = STATISTIC_NAME             : BIN     : 20
   FIELD = LOWER_LIMIT                : LONG    : 1
   FIELD = UPPER_LIMIT                : LONG    : 1
   FIELD = FLAGS                      : BIN     : 1

TABLE    = SERVICE_TERMINAL
   FIELD = RECORD_ID                  : BIN     : 6 : PK
   FIELD = SERVICE_ID                 : LONG    : 1
   FIELD = TERMINAL_ID                : BIN     : 6
   FIELD = LICENSE_KEY                : BIN     : 16
   FIELD = FILESET_ID                 : LONG    : 1
   FIELD = FLAGS                      : BIN     : 1

TABLE    = SERVICE_TYPE
   FIELD = RECORD_ID                  : BIN     : 6 : PK
   FIELD = TYPE                       : BIN     : 1
   FIELD = PARENT_TYPE                : BIN     : 1
   FIELD = TYPE_NAME                  : BIN     : 16
   FIELD = FLAGS                      : BIN     : 1


TABLE    = SERVICE_URC
   FIELD = RECORD_ID                  : BIN     : 6 : PK
   FIELD = SERVICE_ID                 : LONG    : 1
   FIELD = URC                        : LONG    : 1
   FIELD = FLAGS                      : BIN     : 1

TABLE    = SUBSCRIBER
   FIELD = RECORD_ID                  : BIN     : 6 : PK
   FIELD = SUBSCRIBER_ID              : LONG    : 1
   FIELD = ALIAS                      : BIN     : 26
   FIELD = FIRST_NAME                 : BIN     : 20
   FIELD = LAST_NAME                  : BIN     : 20
   FIELD = MIDDLE_INITIAL             : BIN     : 2
   FIELD = STREET_ADDRESS             : BIN     : 40
   FIELD = POSTAL_CODE                : BIN     : 10
   FIELD = PHONE_NUMBER               : BIN     : 10
   FIELD = BIRTH_DAY                  : BIN     : 1
   FIELD = BIRTH_MONTH                : BIN     : 1
   FIELD = BIRTH_YEAR                 : SHORT   : 1
   FIELD = GENDER                     : BIN     : 1
   FIELD = FLAGS                      : BIN     : 1
   FIELD = DEMOGRAPHIC                : LONG    : 1
   FIELD = LAST_UPDATE_DATE_TIME      : LONG    : 1
```

```
TABLE    = SUBSCRIBER_AD
   FIELD = RECORD_ID                  : BIN     : 6 : PK
   FIELD = SUBSCRIBER_ID              : LONG    : 1
   FIELD = AD_ID                      : LONG    : 1
   FIELD = VIEW_DATE_TIME             : LONG    : 1
   FIELD = FLAGS                      : BIN     : 1

TABLE    = SUBSCRIBER_AVATAR
   FIELD = RECORD_ID                  : BIN     : 6 : PK
   FIELD = SUBSCRIBER_ID              : LONG    : 1
   FIELD = AVATAR_TYPE                : BIN     : 1
   FIELD = CONTENT_ID                 : LONG    : 1
   FIELD = FLAGS                      : BIN     : 1

TABLE    = SUBSCRIBER_BRACKET
   FIELD = RECORD_ID                  : BIN     : 6 : PK
   FIELD = SUBSCRIBER_ID              : LONG    : 1
   FIELD = TOURNAMENT_ID              : LONG    : 1
   FIELD = BRACKET_ID                 : BIN     : 1
   FIELD = GAMES_PLAYED               : SHORT   : 1
   FIELD = FLAGS                      : BIN     : 1
   FIELD = RANK                       : LONG    : 1
   FIELD = RANK_DATE_TIME             : LONG    : 1
   FIELD = RANK_SCORE                 : LONG    : 1
   FIELD = AVERAGE_SCORE              : LONG    : 1

TABLE    = SUBSCRIBER_CARD
   FIELD = RECORD_ID                  : BIN     : 6 : PK
   FIELD = SUBSCRIBER_ID              : LONG    : 1
   FIELD = CARD_TYPE                  : BIN     : 1
   FIELD = CARD_DATA                  : BIN     : 16
   FIELD = FLAGS                      : BIN     : 1

TABLE    = SUBSCRIBER_RATING
   FIELD = RECORD_ID                  : BIN     : 6 : PK
   FIELD = SUBSCRIBER_ID              : LONG    : 1
   FIELD = SERVICE_ID                 : LONG    : 1
   FIELD = PROFILE                    : BIN     : 1
   FIELD = RATING                     : BIN     : 1
   FIELD = HANDICAP                   : LONG    : 1
   FIELD = PLAYS_TO_QUALIFY           : BIN     : 1
   FIELD = FLAGS                      : BIN     : 1

TABLE    = SUBSCRIBER_SAVE_STATE
   FIELD = RECORD_ID                  : BIN     : 6 : PK
   FIELD = SUBSCRIBER_ID              : LONG    : 1
   FIELD = SERVICE_ID                 : LONG    : 1
   FIELD = SLOT_NUMBER                : BIN     : 1
   FIELD = PROFILE                    : BIN     : 1
   FIELD = SAVE_STATE_NAME            : BIN     : 20
   FIELD = DATA_FILE_ID               : LONG    : 1
   FIELD = FLAGS                      : BIN     : 1
```

```
TABLE     = SUBSCRIBER_URC
   FIELD  = RECORD_ID                  : BIN     : 6 : PK
   FIELD  = SUBSCRIBER_ID              : LONG    : 1
   FIELD  = URC                        : LONG    : 1
   FIELD  = FLAGS                      : BIN     : 1

TABLE     = TEAM_MEMBER
   FIELD  = RECORD_ID                  : BIN     : 6 : PK
   FIELD  = TEAM_SUBSCRIBER_ID         : LONG    : 1
   FIELD  = SUBSCRIBER_ID              : LONG    : 1
   FIELD  = FLAGS                      : BIN     : 1

TABLE     = TECHNICIAN
   FIELD  = RECORD_ID                  : BIN     : 6 : PK
   FIELD  = TECHNICIAN_ID              : LONG    : 1
   FIELD  = NAME                       : BIN     : 26
   FIELD  = PIN                        : SHORT   : 1
   FIELD  = FLAGS                      : BIN     : 1

TABLE     = TECHNICIAN_TERMINAL
   FIELD  = RECORD_ID                  : BIN     : 6 : PK
   FIELD  = TECHNICIAN_ID              : LONG    : 1
   FIELD  = TERMINAL_ID                : BIN     : 6
   FIELD  = AUTHORIZATION_FLAGS        : BIN     : 1

TABLE     = TERMINAL
   FIELD  = RECORD_ID                  : BIN     : 6 : PK
   FIELD  = TERMINAL_ID                : BIN     : 6
   FIELD  = LOCATION_ID                : LONG    : 1
   FIELD  = LAN_ADDRESS                : BIN     : 4
   FIELD  = FLAGS                      : BIN     : 1
   FIELD  = SERIAL_NUMBER              : BIN     : 20
   FIELD  = HW_CAPABILITIES            : BIN     : 10
   FIELD  = ATTRACT_SCREEN             : LONG    : 1
   FIELD  = SYSTEM_FILESET_ID          : LONG    : 1

TABLE     = TOURNAMENT
   FIELD  = RECORD_ID                  : BIN     : 6 : PK
   FIELD  = TOURNAMENT_ID              : LONG    : 1
   FIELD  = SHORT_NAME                 : BIN     : 28
   FIELD  = NAME                       : BIN     : 72
   FIELD  = START_DATE_TIME            : LONG    : 1
   FIELD  = END_DATE_TIME              : LONG    : 1
   FIELD  = TOURNAMENT_SCOPE           : BIN     : 1
   FIELD  = FLAGS                      : BIN     : 1
   FIELD  = SPONSER                    : BIN     : 40
   FIELD  = ICON                       : LONG    : 1
   FIELD  = SPLASH_SCREEN              : LONG    : 1
   FIELD  = PERCENT_MONEY_TO_POOL      : BIN     : 1
   FIELD  = CURRENT_POOL_VALUE         : LONG    : 1
   FIELD  = PLAYS_TO_DATE              : LONG    : 1
   FIELD  = LAST_UPDATE_DATE_TIME      : LONG    : 1
```

```
TABLE     = TOURNAMENT_URC
   FIELD  = RECORD_ID                  : BIN      : 6  : PK
   FIELD  = TOURNAMENT_ID              : LONG     : 1
   FIELD  = URC                        : LONG     : 1
   FIELD  = FLAGS                      : BIN      : 1

TABLE     = URC_VALUE
   FIELD  = RECORD_ID                  : BIN      : 6  : PK
   FIELD  = URC                        : LONG     : 1
   FIELD  = RESTRICTED_STRING          : BIN      : 30
   FIELD  = FLAGS                      : BIN      : 1

# Working tables - not replicated from EDS server

TABLE     = W_AD_EXPOSURE
   FIELD  = RECORD_ID                  : LONG     : 1  : PK
   FIELD  = TARGET_ID                  : LONG     : 1
   FIELD  = SUBSCRIBER_ID              : LONG     : 1
   FIELD  = PLAY_DATE_TIME             : LONG     : 1

TABLE     = W_AD_EXPOSURE_COUNTS
   FIELD  = RECORD_ID                  : LONG     : 1  : PK
   FIELD  = TARGET_ID                  : LONG     : 1
   FIELD  = TOTAL_PLAYS_TODAY          : SHORT    : 1
   FIELD  = TOTAL_PLAYS_TO_DATE        : LONG     : 1

TABLE     = W_CONTENT_CACHE
   FIELD  = RECORD_ID                  : LONG     : 1  : PK
   FIELD  = CONTENT_ID                 : LONG     : 1
   FIELD  = LOCAL_PATH_SIZE            : SHORT    : 1
   FIELD  = LOCAL_PATH                 : VARBIN   : 1

TABLE     = W_COUPONS_ISSUED
   FIELD  = RECORD_ID                  : LONG     : 1  : PK
   FIELD  = COUPON_ID                  : LONG     : 1
   FIELD  = RECEIPT_ID                 : BIN      : 6
   FIELD  = TERMINAL_ID                : BIN      : 6
   FIELD  = SUBSCRIBER_ID              : LONG     : 1
   FIELD  = ISSUE_DATE_TIME            : LONG     : 1
   FIELD  = FLAGS                      : BIN      : 1

TABLE     = W_DOWN_TIME
   FIELD  = RECORD_ID                  : LONG     : 1  : PK
   FIELD  = START_DATE_TIME            : LONG     : 1
   FIELD  = END_DATE_TIME              : LONG     : 1
   FIELD  = TECHNICIAN_ID              : LONG     : 1

TABLE     = W_FILE_CACHE
   FIELD  = RECORD_ID                  : LONG     : 1  : PK
   FIELD  = FILE_ID                    : LONG     : 1
   FIELD  = LOCAL_PATH_SIZE            : SHORT    : 1
   FIELD  = LOCAL_PATH                 : VARBIN   : 1
```

```
TABLE     = W_LEADERBOARD
   FIELD  = RECORD_ID                  : LONG    : 1  : PK
   FIELD  = LEADERBOARD_ID             : LONG    : 1
   FIELD  = LEADERBOARD_DATE_TIME      : LONG    : 1
   FIELD  = FLAGS                      : BIN     : 1
   FIELD  = MAX_LEADERS                : SHORT   : 1

TABLE     = W_LEADERBOARD_LEADER
   FIELD  = RECORD_ID                  : LONG    : 1  : PK
   FIELD  = LEADERBOARD_ID             : LONG    : 1
   FIELD  = SUBSCRIBER_ID              : LONG    : 1
   FIELD  = ALIAS                      : BIN     : 26
   FIELD  = LOCATION_NAME              : BIN     : 26
   FIELD  = LOCATION_CITY_STATE        : BIN     : 26
   FIELD  = PRIZE_NAME                 : BIN     : 26
   FIELD  = SCORE                      : LONG    : 1
   FIELD  = SCORE_DATE_TIME            : LONG    : 1

TABLE     = W_LEADERBOARD_RANKING
   FIELD  = RECORD_ID                  : LONG    : 1  : PK
   FIELD  = LEADERBOARD_ID             : LONG    : 1
   FIELD  = RANK                       : SHORT   : 1
   FIELD  = SUBSCRIBER_ID              : LONG    : 1

TABLE     = W_LOCAL_LEADERBOARD
   FIELD  = RECORD_ID                  : LONG    : 1  : PK
   FIELD  = LEADERBOARD_ID             : LONG    : 1
   FIELD  = LEADERBOARD_DATE_TIME      : LONG    : 1
   FIELD  = MAX_LEADERS                : SHORT   : 1

TABLE     = W_LOCAL_LEADER
   FIELD  = RECORD_ID                  : LONG    : 1  : PK
   FIELD  = LEADERBOARD_ID             : LONG    : 1
   FIELD  = RANK                       : SHORT   : 1
   FIELD  = SUBSCRIBER_ID              : LONG    : 1
   FIELD  = ALIAS                      : BIN     : 26
   FIELD  = SCORE                      : LONG    : 1
   FIELD  = SCORE_DATE_TIME            : LONG    : 1

TABLE     = W_LOYALTY_POINT_AWARDS
   FIELD  = RECORD_ID                  : LONG    : 1  : PK
   FIELD  = SUBSCRIBER_ID              : LONG    : 1
   FIELD  = LOYALTY_PROGRAM_ID         : LONG    : 1
   FIELD  = POINTS_AWARDED             : SHORT   : 1
   FIELD  = AWARD_DATE_TIME            : LONG    : 1

TABLE     = W_QUEUE
   FIELD  = RECORD_ID                  : LONG    : 1  : PK
   FIELD  = TERMINAL_ID                : BIN     : 6
   FIELD  = AGE                        : SHORT   : 1
   FIELD  = QUEUE_TIME                 : LONG    : 1
   FIELD  = EVENT_TYPE                 : BIN     : 1
```

```
    FIELD = EVENT_DATA_SIZE          : SHORT    : 1
    FIELD = EVENT_DATA               : VARBIN   : 1

 TABLE    = W_REDEMPTION_HISTORY
    FIELD = RECORD_ID                : LONG     : 1 : PK
    FIELD = REDEMPTION_ID            : LONG     : 1
    FIELD = TIMESTAMP                : LONG     : 1
    FIELD = SCORE                    : LONG     : 1
    FIELD = PAR_LEVEL_PAID           : BIN      : 1
    FIELD = SUBSCRIBER_ID            : LONG     : 1
    FIELD = CASH_AMOUNT_PAID         : LONG     : 1

 TABLE    = W_REDEMPTION_LOCAL_POOL
    FIELD = RECORD_ID                : LONG     : 1 : PK
    FIELD = REDEMPTION_ID            : LONG     : 1
    FIELD = LOCAL_POOL_VALUE         : LONG     : 1

 TABLE    = W_REDEMPTION_PAR_LEVEL
    FIELD = RECORD_ID                : LONG     : 1 : PK
    FIELD = REDEMPTION_ID            : LONG     : 1
    FIELD = PAR_LEVEL                : BIN      : 1
    FIELD = ADJUSTED_PAR_ SCORE      : LONG     : 1

 TABLE    = W_SERVICE_ACCESSES
    FIELD = RECORD_ID                : LONG     : 1 : PK
    FIELD = SERVICE_ID               : LONG     : 1
    FIELD = PROFILE                  : BIN      : 1
    FIELD = START_DATE_TIME          : LONG     : 1
    FIELD = END_DATE_TIME            : LONG     : 1
    FIELD = SUBSCRIBER_ID            : LONG     : 1
    FIELD = CASH_FUNDS_USED          : LONG     : 1
    FIELD = ACCOUNT_FUNDS_USED       : LONG     : 1

 TABLE    = W_SERVICE_LEADERBOARD
    FIELD = RECORD_ID                : LONG     : 1 : PK
    FIELD = SERVICE_ID               : LONG     : 1
    FIELD = PROFILE                  : BIN      : 1
    FIELD = LEADERBOARD_ID           : LONG     : 1

 TABLE    = W_TOURNAMENT_LOCAL_POOL
    FIELD = RECORD_ID                : LONG     : 1 : PK
    FIELD = TOURNAMENT_ID            : LONG     : 1
    FIELD = LOCAL_POOL_VALUE         : LONG     : 1
```

I claim:

1. A system for controlling operation of an automatic game, comprising:

(a) an automatic game comprising virtual game pieces which are manipulated during playing of the game, and control hardware and software for displaying and controlling the virtual game pieces,

(b) an administration terminal for inputting and storing parameters relating to game play, and

(c) a network for downloading the parameters from the administration terminal to the game,

whereby operation of the game having its control hardware and software programs stored at a location different from the administration terminal is controlled by said parameters.

2. A system as defined in claim 1 in which the hardware is a video game terminal and the software is stored on at least one of a CD ROM, a DVD, a hard disk drive, dynamic random access memory (DRAM), read only memory (ROM), and a regional server in remote communication with the video game.

3. A system as defined in claim 2 in which the software includes default parameters which are replaced by said parameters downloaded from the administration terminal.

4. A system as defined in claim 1 in which at least one of the parameters is comprised of a formula containing variables which relate to the virtual game pieces.

5. A system as defined in claim 1, further including

a regional server in said network for receiving the parameters input on the administration terminal, storing the parameters, and for downloading the parameters to the game.

6. A system as defined in claim 5 in which the game is one of several games of an arcade, one of the games of the arcade being designated as a master game, a memory in communication with the several games of the arcade, the downloaded parameters being stored in the memory via the master game prior to use thereof by any of the games.

7. A system as defined in claim 6 in which at least one of the parameters is comprised of a formula containing variables which relate to the virtual game pieces.

8. A system as defined in claim 1, the network for sending scores achieved by the games to a regional server, the regional server for determining a number of players of a particular game achieving various score levels, and adjusting at least one of par or score bracket levels as indicators of game achievement based on a predetermined algorithm.

9. A system as defined in claim 1 in which the game is one of several games of an arcade, one of the games of the arcade being designated as a master game, a memory in communication with the games of the arcade, the downloaded parameters being stored in the memory via the master game prior to use thereof by any of the games.

10. A system as defined in claim 9, the master game for determining a number of players of a particular game achieving various score levels, and adjusting at least

one of par or score bracket levels as indicators of game achievement based on a predetermined algorithm.

11. A system as defined in claim 10 in which the algorithm comprises at least one of said parameters.

12. A system as defined in claim 11 including a player identifier, the master game indicating a loyalty point value based on a score achieved by an identified player as having a relationship to the par score or to the bracket levels, and for loading the loyalty point value to a regional server for credit to a database credit account of the identified player.

13. A system as defined in claim 12 in which the loyalty point value corresponds to at least one of the parameters.

14. A system as defined in claim 11, a network for uploading a score achieved by an identified player to a regional server, the regional server indicating a loyalty point value based on the score achieved by the identified player as having a relationship to the par score or to bracket levels, the regional server storing the loyalty points in a database credit account of the identified player.

15. A method of controlling operation of an automatic game comprising:

(a) providing a local automatic game having variable operating parameters,

(b) downloading the parameters from a remote location, and

(c) operating the game with the downloaded parameters.

16. A method as defined in claim 15, in which the parameters are comprised of at least one formula for controlling virtual game pieces generated and displayed by the local automatic game.

17. A method as defined in claim 15 in which the parameters specify at least one of speed of movement of the virtual game pieces and scores granted during the operation of the game resulting from manipulation of the virtual game pieces by a player.

18. A method as defined in claim 17 in which other downloaded parameters are comprised of score achievement brackets or a par score.

19. A method as defined in claim 16 in which other downloaded parameters are comprised of score achievement brackets or a par score.

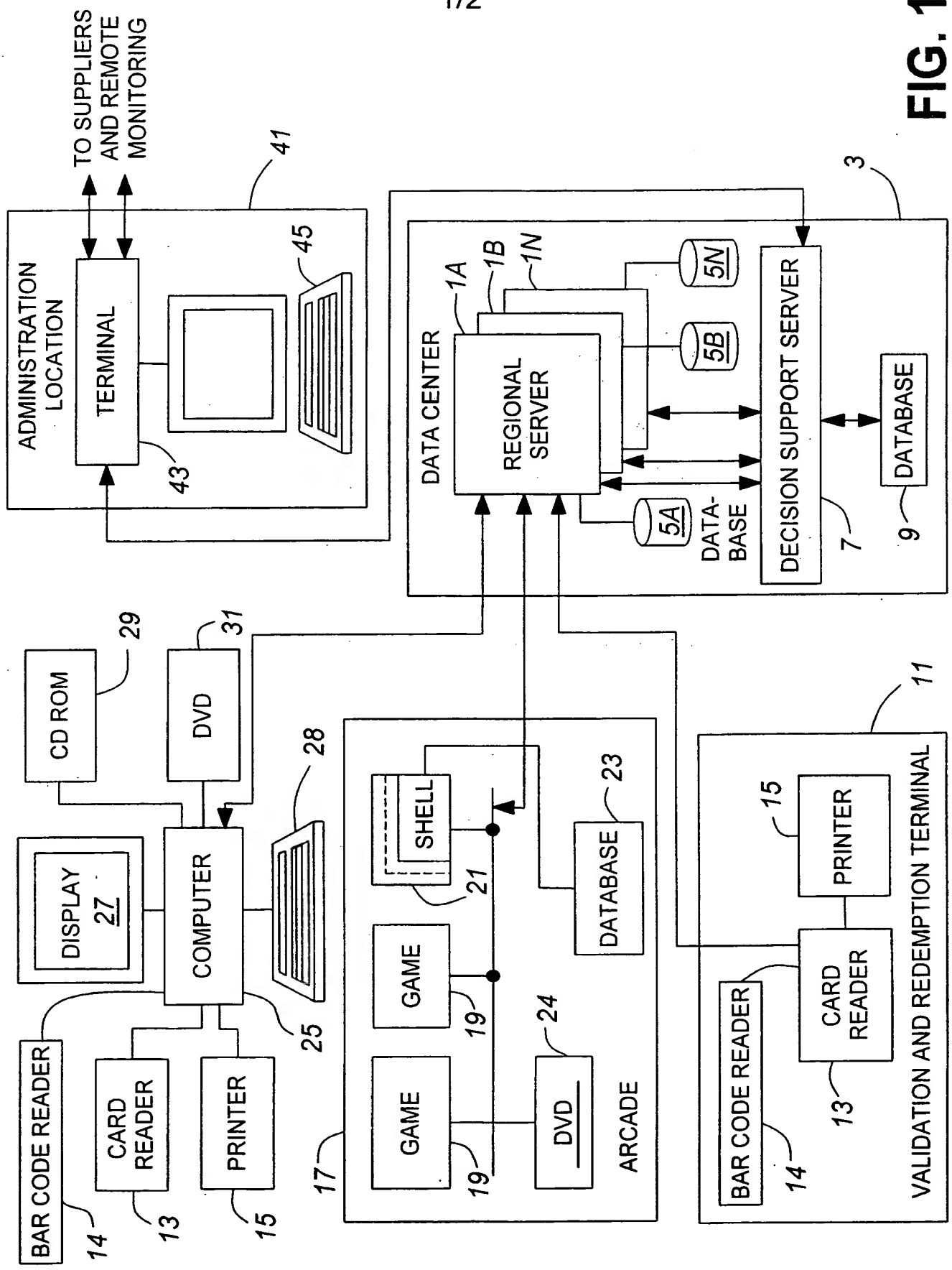

FIG. 1

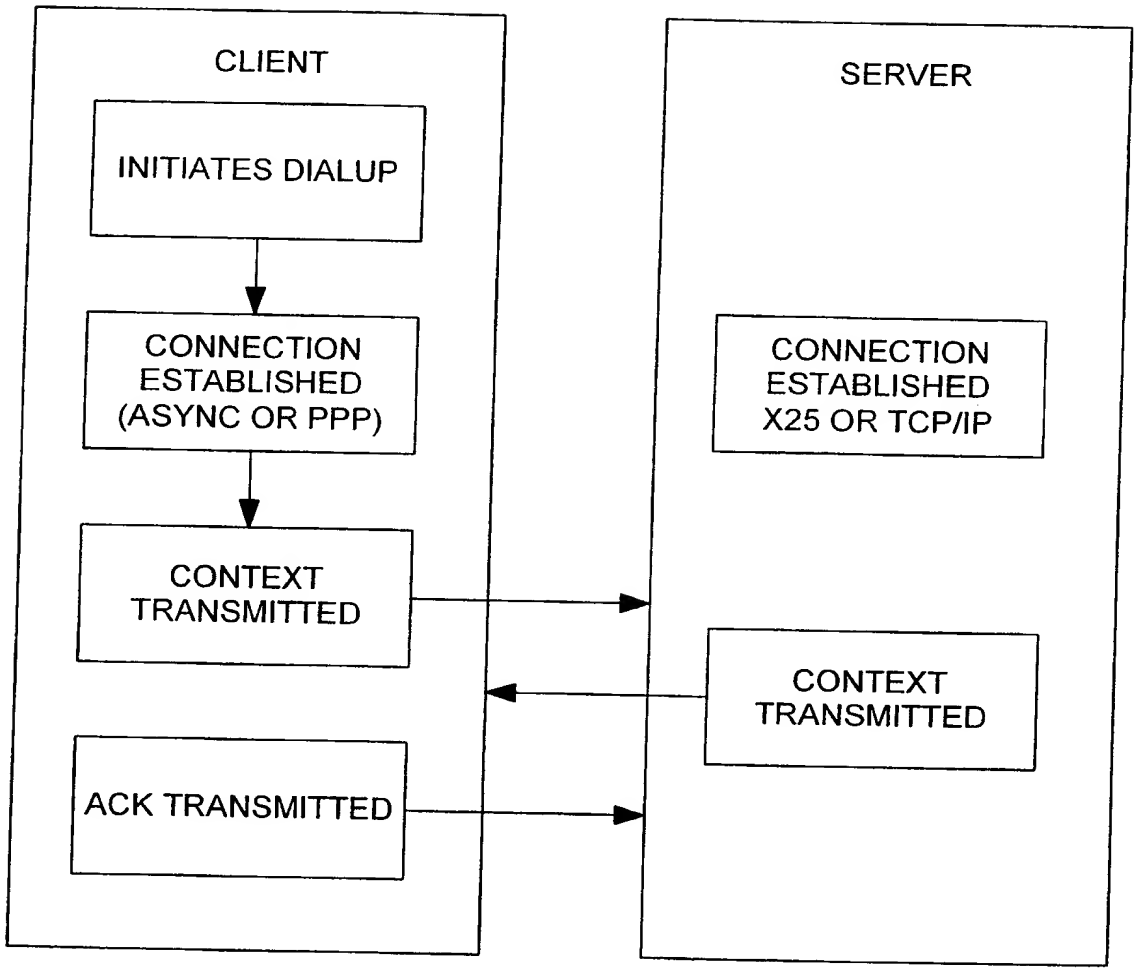

FIG. 2

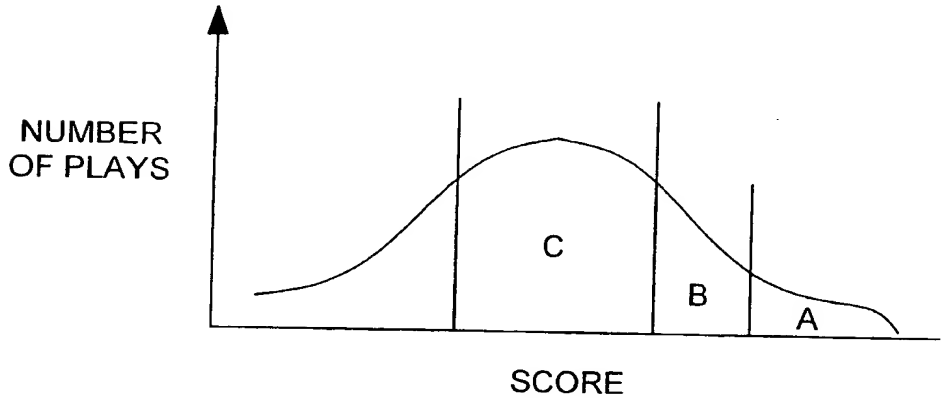

FIG. 3

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CA 99/01199

A. CLASSIFICATION OF SUBJECT MATTER

IPC7: A63F 13/12, G07F 17/32 // A63F 013/10
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7: A63F, G07F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0405776 A2 (INTERACTIVE NETWORK, INC), 2 January 1991 (02.01.91), column 5, line 29 - column 6, line 16, figure 3, claim 1, abstract --	1,4,8-11, 15-19
A	WO 9830297 A1 (SILICON GAMING INC.), 16 July 1998 (16.07.98), page 4, line 15 - page 5, line 20, figures 1,2, abstract --	1-19
A	US 5770533 A (FRANCHI), 23 June 1998 (23.06.98), figure 2, abstract --	1-19

[X] Further documents are listed in the continuation of Box C. [X] See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" erlier document but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
6 April 2000	22 05 2000
Name and mailing address of the International Searching Authority European Patent Office P B 5818 Patentlaan 2 NL-2280 HV Rijswijk Tel(+31-70)340-2040, Tx 31 651 epo nl, Fax(+31-70)340-3016	Authorized officer Carolina Stolt/AB Telephone No.

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/CA 99/01199

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0745948 A2 (TWO WAY TV LIMITED), 4 December 1996 (04.12.96), figure 1, abstract -- US 5779549 A (WALKER ET AL.), 14 July 1998 (14.07.98), figure 1, abstract -- --------	1-19 1-19

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.
PCT/CA 99/01199

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		CA 2018597 A	09/12/90
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		WO 9739811 A	30/10/97